Unaccusativity at the Interfaces

by

Patricia L. Irwin

A dissertation submitted in partial fulfillment

of the requirements for the degree of

Doctor of Philosophy

Department of Linguistics

New York University

September, 2012

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Alec Marantz — Advisor

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Acknowledgements

I am fortunate to have had the support of many people on the way to writing this dissertation. I'd like to thank my committee first and foremost. My committee members were incredibly supportive and always available—sometimes on short notice—for advice and feedback. I owe the deepest thanks to my advisor, Alec Marantz. Each meeting I had with Alec made me revise my notion of what linguistics can and should be about; Alec also kept me on track and patiently helped me push my ideas forward. In order to save space, I will simply say that I can't imagine a better advisor. I would like to thank Richard Kayne for asking the toughest questions throughout the writing of this thesis. Richie has had a direct influence on nearly every paper I've written at NYU since I took Syntax II with him in my first year, and I continue to be grateful for his generous support and feedback. I would like to thank Chris Barker for helping me to clarify my ideas and for encouraging me to put more of my cards on the table; Chris has also provided a model of teaching excellence that I aspire to. Adam Buchwald provided important advice regarding the empirical parts of the thesis that were particularly helpful early on in the process. I especially look forward to working with him further on the corpus data. Last but not least, I would like to thank Julia

There are a number of people with whom I had brief but helpful interactions. I would like to thank Sasha Calhoun for corresponding with me over email about the corpus itself. I continue to be heartened by her comment that you often get a small N when you ask interesting questions of a corpus. Gregory Ward provided support over email and at various conferences where I presented my work on information structure. Thanks to Jesse Snedeker for meeting with me and inviting me to give a talk to her lab in the fall of 2011.

One of the advantages of going to NYU is the fact that many scholars often pass through New York, and NYU students get to take advantage of their willingness to meet with us. My work has particularly benefited from meetings with David Beaver in the fall of 2010, and Lisa Selkirk in the spring of 2009. I would especially like to thank Jacqueline Guéron for stimulating discussion during her visit to New York in the summer of 2012, and for the detailed feedback she has provided on my work on information structure. Francesca Delogu has been a post-doctoral researcher at NYU in the 2011–2012 academic year, and she was a huge source of help with the Italian data in this dissertation. Thanks to Lucie Medova for sharing a file with me that helped me learn to do all sorts of fancy things in LaTeX. Jeroen van Craenenbroeck and Arhonto Terzi spent the fall of 2008 as visiting professors at NYU and greatly enriched the department when they were here. Although the papers I discussed with them were different from the topic of this thesis, I am grateful for the times they met with me—I found these meetings valuable in helping me to think like a syntactician.

I wouldn't be at NYU—or perhaps even studying linguistics at all—if it weren't for Shelly Lieber and Naomi Nagy at the University of New Hampshire.

I still remember meeting with Naomi in the hot summer of 2003 as I contemplated a very big career change. Naomi's encouragement and mentorship have continued throughout my time at NYU. My work with Shelly Lieber at UNH provided the foundational tools for my current theoretical work, and I continue to be grateful for her mentorship at UNH and beyond—especially on the periodic visits I make back to New Hampshire. I met Malcah Yaeger-Dror when I was a student at UNH, and I have been grateful for her enthusiastic support of my work ever since we first met.

The community of students at NYU has been terrific, and I'd especially like to thank Jim Wood for starting up syntax gatherings at local bars with me, Inna Livitz, and Neil Myler. Inna provided generous help with the Russian data in Chapter 2. I'm also grateful to Inna for sharing with me her smarts and her sense of fun; I feel lucky that she is willing to be my go-to person for practice talks.

I would like to thank Vincent Chanethom and Violeta Vázquez-Rojas for being more than just officemates. Although we have helped each other with linguistic matters over the years, the friendship we formed is what matters the most. My time at NYU would have been very bleak without all the fun (okay, hilarious) times we shared.

There are many other students at NYU who have enriched my time here. I am grateful for the help I've received with my work and with navigating my way through the program from some of the more advanced students: Jon Brennan, Andrea Cattaneo, Suzanne Dikker (thanks also for help with Dutch), Sonya Fix, Tom Leu, Lisa Levinson, Jen Nycz, Tuuli Morrill, Laura Rimell, Marcos Rohena-Madrazo, Oana Săvescu, Jason Shaw, Cara Shousterman, Amy Wong, and Eytan Zweig.

Abstract

In standard generative approaches, the central component of the grammar is the syntax. Syntax builds the structure of a sentence, and, at a certain point in structure-building, a syntactic object is sent to the two other components of the grammar: the semantic component, where meaning is computed, and the phonological/modality component, where the syntactic object is given form in sound. This dissertation contributes to our understanding of the way in which syntactic structure has effects at the interfaces with syntax. It does so by focusing on unaccusativity, defined as a syntactic configuration in which a sentence has no external argument and a single VP-internal argument requiring structural case.

This working definition of unaccusativity picks out two structural "direct object" positions. The syntactic analysis in the dissertation argues that the two VPs that contain these direct objects correspond to two well-known classes of unaccusative predicates: those that denote changes of state (e.g., *break, freeze*), and those that denote motion and existence (e.g., *arrive, drive up*). This part of the dissertation discusses English unaccusativity diagnostics with respect to these two structures. Drawing on event-based approaches to argument structure, I argue that the relationship of

agreement or lack of agreement between the direct object and an event-introducing *v* head has consequences for the strong/weak determination of *voice* (or little-*v*, in a Chomskyan system) further along in the derivation.

Turning to the interpretive interface, I argue that the two unaccusative structures have differing effects. I argue that these differences are seen in the establishment of new discourse referents in English. My analysis starts from a long-standing observation in the functional literature: new discourse referents tend to occur as transitive direct objects rather than as subjects. I propose that transitive sentences allow existential closure at the VP level (over a direct object), only in the context of a predication, where a predication is defined as a semantically asymmetrical relationship between two phrases. I argue that this mechanism is available in only one type of unaccusative configuration: only one structural type of unaccusative sentence can establish a new discourse referent in the same way that transitive sentences can. This argument is supported by a corpus study that compares the occurrence of old and new "subjects" of unaccusative and unergative predicates in a subset of the Switchboard Corpus that was independently annotated for NP information status.

Turning to unaccusativity at the syntax-phonology interface, I show that the distribution of prosodic prominence in all-new unaccusative sentences of both structural types differs from that of all-new unergative sentences. Drawing on recent phase-based accounts of the syntax-prosody interface, I argue that both types of unaccusative VPs are selected for by a *voice* head that does not trigger spellout, and that this results in just one domain for accent assignment in all-new sentences. I show how the presence of strong voice (Chomskyan *v**) in unergative sentences results in either one or two domains for prosodic prominence in all-new unergative sentences.

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CHAPTER 1

Introduction

1.0 Syntax and its interfaces

In generative approaches to syntax, the central component of the grammar is the
syntax. Syntax builds the structure of a sentence, and, at a certain point in structure-
building, a syntactic object is sent to two other components of the grammar: the
semantic component (LF), where meaning is computed, and the phonological com-
ponent (PF), where the syntactic object is given expression in sound. The components
of the grammar that syntax feeds into are called the "interfaces" with syntax. But the
existence of phenomena that involve syntax but appear to be motivated by interface
considerations—focus, for example—leads to the question of what aspects of syn-
tactic structure are and are not responsible for effects at the interfaces. The goal of
this dissertation is to shed light on this question with respect to two subparts of the

phonological and interpretive interfaces with syntax: the syntax-prosody interface and the syntax-discourse structure interface.

In particular, these interfaces are explored with respect to unaccusativity, the syntactic configuration in which the single argument in an intransitive sentence is merged VP-internally. Unaccusative sentences contrast with unergative sentences, those in which the single argument in the sentence is standardly analyzed as merged external to the VP. This distinction is shown schematically in (1) and (2), where the sole argument in each sentence is underlined.

(1)   Unaccusative sentence

A bottle [$_{VP}$ broke *<a bottle>*]

(2)   Unergative sentence

Jamie [$_{VP}$ danced]

In English, the sole argument in an unaccusative sentence almost always moves out of the VP to a VP-external position, as shown in (1).

Unaccusativity provides a good window into consequences of syntactic structure at the interfaces. The fact that unaccusativity involves a specifically *syntactic* contrast allows us to ask whether the differing syntactic representations of sentences like (1)–(2) have interface effects, and if so, what those effects may be.

One of the ways in which syntax has been claimed to have an effect at the phonological interface is in the area of sentence stress. Approaches to sentence stress in generative syntax have long held that the way in which syntax chunks constituents together has an effect on prosody. This idea was implemented in Chomsky and Halle's

(1968) Nuclear Stress Rule (NSR). The NSR operated on a syntactic object consisting of bracketed constituents, and stress levels were cyclically assigned, either rightward or leftward, within each constituent.

In current generative grammar, a completed cycle of syntactic operations is called a phase (Chomsky, 2000, 2001, 2008), and on a phase-based approach to syntax, syntactic objects are sent to the interfaces throughout the derivation of a sentence. The exact nature of phases—the amount of structure that is built up during a phase, and what triggers the action that sends a chunk of structure to the interfaces—is the subject of current debate. But in all versions of a phase-based approach, the merger of a phase head results in a chunk of syntactic structure being sent to the interfaces; phases thus determine the unit of currency between syntax and PF and LF. One hypothesis about the syntax-prosody interface holds that the structure built up during a phase constitutes the domain over which sentence stress (or what I call "phrase stress," for reasons discussed in Chapter 5) is calculated (Kahnemuyipour 2009; Kratzer and Selkirk 2007). In addition, unergative and unaccusative sentences have been claimed to differ from each other in their phasal makeup. These hypotheses lead to the prediction that unaccusative and unergative sentences differ from each other in their prosody.

Sentences with no external argument and only one VP-internal argument have been claimed to consist of only one phase, whereas sentences with only an external argument (unergative sentences) or with an internal and an external argument (transitive sentences) have been claimed to minimally consist of two phases. These differences have been argued to result either from the fact that sentences with an external argument involve extra syntactic structure of the right sort, or because the features

associated with particular syntactic heads differ between sentences with and without an external argument. One question that the current work asks is the extent to which phases determine the syntactic domains that are relevant for interface phenomena. If phases do play a role, then behavior at the interfaces can be used to diagnose syntactic structure and to choose between competing syntactic representations.

Another way in which unaccusativity can provide insight into the interfaces with syntax is seen in information structure, at the semantic interface (LF) . For example, we can compare the information status of the direct object in (1), repeated below as (3a), to that of the direct object in a transitive sentence, as shown in (3b). If we know that certain properties hold of transitive direct objects at the interfaces, then we can ask whether those properties hold of intransitive direct objects at the interfaces.

(3)   a.   <u>A bottle</u> broke.

       b.   Jamie broke <u>a bottle</u>.

This question amounts to asking what the effect is of adding an extra syntactic domain to a sentence like (3a). For example, it has long been known that transitive direct objects are more likely than external arguments to contain information that is new to an ongoing discourse (Prince, 1981). One question that the current work will address, therefore, is whether intransitive direct objects and transitive direct objects share certain information structural properties. This issue pertains to the interface of syntax with information structure and discourse, which can be seen as a part of the semantic/pragmatic component of the grammar, though information structural mat-

ters extend beyond LF, since they involves the coherence of a conversation across multiple sentences.

1.1 Proposal

Testing the effects of unaccusativity at the interfaces first requires a theory of how unaccusativity is represented in the syntax. This section therefore presents the analysis of unaccusativity that is argued for in this work.

1.1.1 Assumptions

One of the assumptions in the analysis presented below is that what is standardly called "argument structure"—the way in which events and participants in those events get expressed syntactically—exists as a consequence of the way structural configurations in the syntax are interpreted. This view stands in contrast to older approaches in generative grammar, those in which argument structure is essentially a property of lexical items. For example, on the older view, the lexical entry of a verb is associated with two bits of information that determine its distribution in the syntax: a subcategorization frame, which indicates the verb's required arguments, and a theta grid, which indicates the ways in which these arguments are interpreted. A lexical entry in the style of this approach is given in (4) for the verb *destroy*.[1]

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[1] See for example Haegeman (1994: 41–55).

(4)   Argument structure for *destroy*

verb	subcat frame	theta grid
destroy	V, [__ DP$_i$]	AGENT , THEME$_i$

In contrast, the current proposal builds on recent work that syntactically decomposes the event structure of sentences, as in Ramchand (2008) and Schäfer (2008). On these approaches, the lexicon is much more impoverished than in lexicon-driven approaches and consists of a collection of roots that have no category until they are merged in the syntax with a categorizing functional head (Halle and Marantz 1993; see also Borer 2005). This approach has become standard in contemporary work on argument structure and syntax, but it is particularly crucial in the current analysis, because here the only determinant of the interpretation of the event denoted by the VP and the participants in it is the internal structure of the VP. Semantic interpretation of theme DPs comes about configurationally. This approach (associated with Hale and Keyser 1993, 2002) thus takes that of Ramchand (2008) one step further by impoverishing the syntax of the functional heads that in Ramchand's system determine the interpretation of DP participants in an event. Here, the only determinant of the interpretation of DP arguments is the syntactic configuration in which those arguments occur.

An unaccusative sentence is defined in the current study as an intransitive sentence with a "direct" VP-internal argument, and no external argument (see Chapter 2 for discussion). Contemporary approaches to argument structure like those discussed above allow for the possibility of more than one structural position for a direct

VP-internal argument. These approaches, along with a working definition of unaccusativity, lead to the possibility of more than one unaccusative configuration. The idea that there may be more than one syntactically unaccusative configuration is not a new one (see Kural 2002, Harves 2002, and, more recently, Deal 2009), but it has not been until now, in a post-Ramchandian approach to argument structure, that we have been able to implement this insight in such a way that the differences in unaccusative configurations have interpretive consequences. The current approach therefore takes the analysis of unaccusativity one step beyond approaches that exploit the structural positions (without interpretive consequences) afforded by X′ theory. On the approach taken here, structural differences result in meaning differences.

1.1.2 Unaccusativities

This section presents the analysis in a nutshell. It focuses on two main types of unaccusative structures, though other unaccusative configurations are possible, as I discuss in Chapter 3. The two structures are shown abstractly in (5). The configuration in (5)A is for unaccusative VPs that denote changes of state; I call this structure the "simple complement" structure. The structure in (5)B is for unaccusative VPs that denote changes in location or existence; this is the "complex complement" structure. In this configuration, the complement of v is a small clause, and the direct object DP is the subject of that projection. In both unaccusative structures, the single argument in the sentence is merged VP-internally and is interpreted as a theme, as the undergoer of some change.

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(5)   Two types of unaccusative VPs

Simple complement structure   **Complex complement structure**

a.   *A bottle broke.*   b.   *Some hippies arrived.*

VP
V   DP
break
a bottle

VP
V   SC
arrive
DP   PLACE*locative*
some hippies
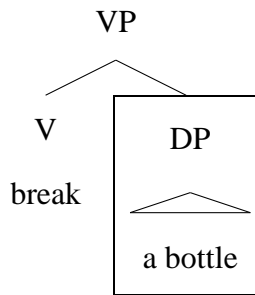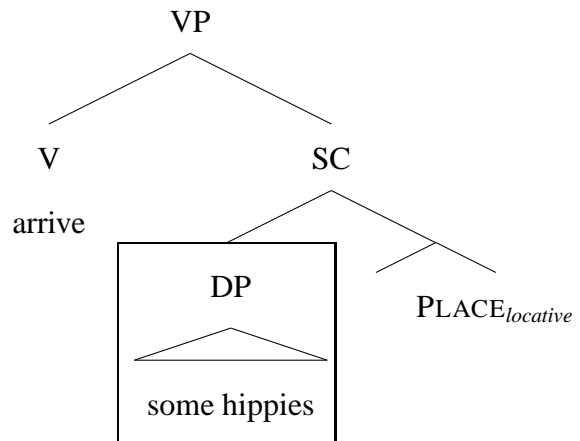
In the trees in (5), the single argument in each case is indicated in order
to highlight the different merge positions of these DPs. Each merge position with
respect to the other elements in the VP results in a different semantic interpreta-
tion. In the simple complement structure, the DP is interpreted as undergoing a
change of state—in this case, to a state of being 'broken'. In the complex com-
plement structure, the DP is interpreted as undergoing a change of state with re-
spect to a contextually-determined locative element, shown here as the unpronounced
locative DP PLACE, in the spirit of Kayne (2005, 2010c). The implementation of
this locative as contextually-given is inspired by the literature on existential sen-
tences (Partee and Borschev 2004; Francez 2007). It is particularly inspired by what
Francez (2007) calls a "contextually given" set that serves as a silent argument in ex-
istential sentences (an idea that is itself analogous to Erteschik-Shir's (2007) "stage

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topic"). Change of state in the context of PLACE is interpreted more specifically; it is interpreted as the change from non-existence to existence, where "existence" can mean simply presence in the current discourse.

1.2   Interface consequences

As will be discussed more fully in Chapter 4, one interpretive difference between the structures in (5) has to do with predication, where 'predication' is defined as an asymmetrical relationship between two phrases. In sentences that have a SC complement of V (the complex complement structure), there is a predication between the DP argument (e.g., *some hippies*) and the locative element. I will offer speculations on the nature of the projection that mediates this predication, but I will leave some details of this structure—for example, whether it is headed or not—to further research. The analysis here also abstracts away from any differences there may be between SC and Pred projections.

Turning to the simple complement structure, I argue that the argument here (e.g., *a bottle*) is not part of a predication: given the definition of predication as an asymmetric relationship between two phrases, there is no relationship of predication between *a bottle* and the verb. I argue further that the differences with respect to predication between the two structures in (5) results in a difference in the availability of the semantic mode of composition called existential closure (Heim 1982; Kratzer and Shimoyama 2002). Existential closure is standardly assumed to be available over the material in the VP, and I follow the literature on this assumption. But I add to this assumption the proposal that existential closure must occur in the presence of a predication. In Chapters 3 and 4 I argue that the differences in the availability of

existential closure between the two unaccusative structures is revealed at the interface with information structure. In Chapter 5, I make the case that the difference in predication types between these structures does *not* have a direct effect at the interface with prosody.

1.2.1 Information structure

In the previous section, I previewed my argument that the availability of existential closure at the VP level has effects at the syntax-information structure interface. Specifically, I claim that the availability of existential closure in the complex complement structure (5)B has the effect that the direct object DP in this configuration can function as a new discourse referent in the same way that a transitive direct object can function as a new discourse referent (where "discourse referent" is understood in the sense of Karttunen 1976). The idea that existential closure over a VP-internal argument can result in a new discourse referent builds on early work by Guéron (1980), who argued that presentational LFs require the "focus NP" to be c-commanded by the verb. The proposal that existential closure requires a predication builds on a long line of research inspired by Kuroda's (1972) thetic-categorical distinction and discussed more recently by e.g. Ladusaw (1994), Lambrecht (2001), Jäger (2001). I discuss this distinction further in the conclusion of Chapter 4.

By contrast, the simple complement structure in (5)A does not involve a predication and therefore does not allow for existential closure over the direct object. I argue that the simple complement structure cannot establish a discourse referent for the direct object DP in the way that a transitive or complex complement structure can. I describe my hypothesized requirements for this means of discourse referent

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introduction more fully in Chapter 4. It should be noted that I do not claim that discourse-new DPs cannot occur in the simple complement structure or that such sentences are not well-formed; it is only to say that the VP structure of (5)A does not satisfy the requirements for discourse referent introduction that transitive structures and complex complement structures do. The means by which sentences like those in (5)A establish discourse referents (to the extent that they do) are different, and I do not postulate what these means might be.

One question that arises with respect to the structures in (5) is the relation of these intransitive direct objects to direct objects in transitive sentences. One difference between the structures in (5) is that the simple complement structure generally allows for the merger of an external argument-introducing head to be merged above the VP. In other words, (5)A allows for transitivity alternations. One claim defended in the current work is that the addition of the extra domain for an external argument results in a configuration in which a predication can occur. The transitive configuration therefore allows for existential closure over the VP and allows for the establishment of a discourse referent for a (transitive) direct object; this possibility is not available if the structure in (5)A remains intransitive, and no further structure is merged above. The claims about the structures in (5) with respect to their discourse-referent introducing properties are summarized in example sentences in (6) and (7).

(6)   Discourse referents established

    a.   Jamie broke <u>a bottle</u>.   ✓new discourse referent

    b.   <u>Some hippies</u> arrived.   ✓new discourse referent

(7)   Discourse referent not established

        A bottle broke.   # new discourse referent

        This section has given an overview of the syntactic analysis of two basic
unaccusative configurations (5), the simple complement structure and the complex
complement structure. This section has argued that structural/interpretive differences
within the VP—the merge position of the direct object and whether this element is
in a predication with another phrase—result in differing effects with respect to the
establishment of discourse referents. The following section turns to the question of
whether the consequences of the structures in (5) result in similarly asymmetrical
behavior at the interface with prosody.

1.2.2   Prosody

One of the central questions of this dissertation is whether the syntactic domains
relevant to the syntax-information structure interface are the same or different from
those relevant to the syntax-prosody interface. I will show that the domains relevant
for prosody and for information structure are not always the same. This difference
holds in spite of the fact that in languages like English, there is a close correlation
between the information status (e.g., given vs. new) of a DP and the prosodic realiza-
tion of that DP. The previous sections have previewed the theoretical analysis of two
types of unaccusative sentences and argued that the structural differences between
the two types of sentences are reflected in the types of discourse functions the sen-
tences can have. This section will present an overview of my claim that the structural
differences between the two types of unaccusatives are not reflected in the prosody

of all-new unaccusative sentences, though prosody *does* distinguish between all-new unergative sentences and both types of unaccusative sentences.

There has been much debate about whether the domains relevant for the assignment of sentence accent in English are determined syntactically or semantically. Most agree that syntax plays some role in stress assignment, but there is no consensus on the extent to which it does, or what those syntactically-determined domains might be. Chomsky and Halle's NSR, for example, operated on a complete, fully-formed representation of a sentence—the "surface structure" of the sentence. But the rules of the NSR applied to flattened (non-hierarchical) syntactic constituents starting at the word level and working outward. The NSR was recursive in that the output of one level was the input to the next.

Schmerling (1976) was among the first to observe that the NSR predicts the wrong stress pattern for some intransitive sentences, and her work started a line of research in which the domain for accent assignment was not syntactically determined, but, rather, determined by semantic structure. Schmerling's solution to the problem of stress in intransitive sentences was to propose that stress assignment was sensitive to function-argument relationships, where arguments are assigned stress over predicates (functors). This is Schmerling's Principle (II) of stress assignment (Schmerling, 1976: 82). This fundamental insight has been enormously influential and has continued in the work of Gussenhoven (1984) through Wagner (2005). On this approach, the domain for accent assignment is semantically-defined and consists of function-argument pairs. The relation to syntax here is not direct, though it may be that the constituents that serve as function and argument are syntactically determined.

Over the years, the observation from Schmerling and others that not all intransitives are pronounced alike was transformed into a generalization about the unaccusative/unergative distinction. The intuition is reported that in all-new unaccusative sentences, accent is on the subject, and in all-new unergative sentences, sentence accent is on the predicate or is variable (see Zubizarreta and Vergnaud 2006, for an explicit linking of sentence accent to the unergative/unaccusative distinction). These intuitions are shown in (8)–(9), where capitalization indicates phrase stress.

(8)   A BOY fell.   *subject-accent pattern*

(9)   A boy JUMPED.   *verb-accent pattern*

This dissertation considers the consequences of a phase-based assignment to phrase stress, an approach first articulated by Adger (2003), Kahnemuyipour (2004, 2009), and further advanced by Kratzer and Selkirk (2007), among others.

1.3   Overview of the dissertation

The dissertation is organized as follows. Chapter 2 provides background on the notion of unaccusativity and clarifies the definition of unaccusativity in current generative grammar and current approaches to argument structure. This chapter discusses the standard unaccusativity diagnostics in English as well as data from other languages. One of the points this chapter makes is that we must separate out the notion of unaccusativity from the (possible) movement of a direct object to a VP-external subject position. Unaccusativity diagnostics from languages like Italian and Russian will help us make this conceptual separation.

Chapter 3 presents the details of the analysis that were sketched here, focusing on the two broad types of unaccusative structures. This chapter also provides evidence that unaccusative configurations other than the ones shown in (5) are possible. This chapter then returns to the unaccusativity diagnostics in English to show how the proposed analysis accounts for these phenomena.

Chapter 4 discusses the information structural consequences of unaccusativity. This chapter presents a corpus study that supports the claim that the two broad types of unaccusative structures have effects at information structure, such that only the complex complement structure introduces new discourse referents.

Chapter 5 presents a phase-based analysis of the pronunciation of all-new unaccusative and unergative sentences. This chapter provides an explanation for the results of a production study presented in Irwin (2011). Since the phase-based approach to the interfaces is currently an area of ongoing research, this chapter clarifies the possible phase-based approaches to the syntax-prosody interface, explaining what is at stake in each possible definition of *phase* and *spellout domain*. In this chapter I argue that an approach along the lines of Kratzer and Selkirk (2007) best accounts for the differences in the pronunciation of all-new unaccusative and unergative sentences.

Chapter 6 summarizes the main claims and contributions of the dissertation, including an overview of the analysis and the typology of functional heads that play a role in the structures I propose.

Background on Unaccusativity

2.0   Introduction

This chapter provides some background on how the notion of unaccusativity came about in Relational Grammar, and how unaccusativity was defined in this framework. I then discuss how we can import this definition into current syntactic theory, and I propose a working definition of unaccusativity. The chapter then provides a brief overview of standard unaccusativity diagnostics in Italian, Russian, and English.

2.1   The origins of unaccusativity

Unaccusativity was originally defined in the framework of Relational Grammar (RG), a theory in which grammatical relations like subjecthood and objecthood are primitive notions, formalized with the numeric labels "1" and "2". These labels designate

the grammatical role of a constituent in a sentence: a subject is a 1, and a direct object is a 2.[1] Interestingly, the notion of unaccusativity emerged in the context of a larger debate within RG about the analysis of passive sentences. To present this debate, I will sometimes use terminology from transformational syntax rather than that of RG, though I will note when I do so. This is to make central insights of the analyses more clear to readers who are not familiar with the RG framework. For example, RG does not make a distinction between deep and surface structure. RG does have a notion of different levels of grammatical relations, however, and we might think of RG's *initial level* of grammatical relations as akin to the deep structure of a sentence (or, in more contemporary terms, the beginning of the derivation of a sentence).

In the mid-1970s, there were two competing RG analyses of passive sentences. Perlmutter (1978) argued that passive sentences involve the movement ("advancement" in RG) of a direct object to an occupied subject position. This advancement effectively knocks out the original subject ("demoting" it), making the original subject a "chômeur," in RG terminology—an "unemployed" constituent. On the competing analysis of passives, the subject of a sentence becomes unemployed spontaneously—it is not forced to become a chômeur by another constituent.

These two analyses can be described in non-RG terms as follows: In (10), the direct object *a mushroom* moves to the subject position occupied by *Jamie* (keeping in mind that movement does not occur RG). The subject is thus knocked out and becomes unemployed, a chômeur (in the *by*-phrase). The resulting sentence is given in (10b).

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[1]Perlmutter and Postal say that they avoided the terms 'subject' and 'object' because the use of these terms outside of RG made their definition in the framework of RG less clear (Perlmutter and Postal, 1984: 94).

(10)   The advancement analysis of the passive: one step only

a.   Jamie ate [a mushroom] [by Jamie]

b.   [A mushroom] (was) eaten by Jamie.
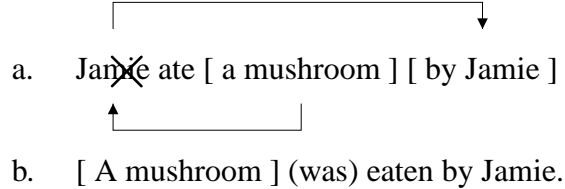
In the "demotion" analysis of the passive, we can think of there being either one or two steps. First, the subject spontaneously demotes itself from the subject role to an unemployed role, abandoning its status as a 1. This first step is schematized as a transformational movement in (11).

(11)   The spontaneous demotion analysis of the passive, step 1

<Jamie> ate a mushroom [by Jamie]
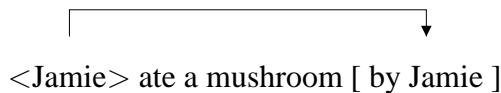
In many languages, a second step occurs: the direct object "moves" to subject position. In RG, this operation was called 2-to-1 advancement. This is schematized as a transformational movement operation in (12). Note that if 2-to-1 advancement were not to happen—if *a mushroom* stayed in-situ, to use transformational terms—the sentence would lack a subject.

(12)   The spontaneous demotion analysis of the passive: 2-to-1 advancement

[A mushroom] (was) eaten <a mushroom> by Jamie
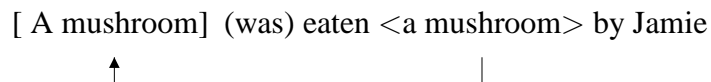
One argument in favor of the demotion analysis of the passive came from sentences that appeared to not have subjects at the final level of grammatical relations. Put

in non-RG terminology: there appeared to be sentences that involved the transformation in (11) but did not have the step shown in (12). Such sentences included impersonal passives in languages like Dutch, as shown in (13), where (13b) is the crucial example.

(13)   Dutch impersonal passive sentences   (from Perlmutter 1978)

      a.   Er wordt door de kinderen op het ijs geschaatst
            It   is   by   the children on the ice skated
            It is skated by the children on the ice

      b.   Hier wurde den ganzen Abend   getanzt
            Here was   the whole evening danced
            It was danced here all evening

The sentence in (13b) does not seem to be derived from a sentence in which *here* is a direct object (as in, *they danced here the whole evening*). Such data were seen as supporting the spontaneous demotion analysis. But Perlmutter argued against the spontaneous demotion analysis, in part because it entailed that one of the universals of RG, the "Final 1 Law," could not hold. The Final 1 Law held that all sentences must have a 1 (subject) at the final level of grammatical relations (Perlmutter and Postal, 1983). Perlmutter was forced to argue that in cases like (13b), where it looks like no knocking out is happening, there is actually a "dummy" element that is introduced into the derivation as a 2 (a direct object); the dummy is then promoted to subjecthood by 2 to 1 advancement, thereby knocking out the subject.

In the course of arguing that the Final 1 Law was universal and that passive sentences always involve the advancement of an object that knocks out a subject, Perlmutter (1978: 160) hypothesized that there must be some sentences that have

a 2 (object) and no 1 (subject) at the initial layer of grammatical relations—at the start of the derivation, in non-RG terms. This proposal was famously called "the unaccusative hypothesis."[2,3]

In RG, the hypothesis that some sentences do not start off with a subject led to a typology of sentence types: intransitive sentences with initial subjects (unergatives), intransitive sentences with initial objects (unaccusatives), and transitive sentences. Because of the Final 1 Law, the initial direct object in an unaccusative sentence almost always takes on the subject role. Perlmutter (1978) proposed an additional law which said that during the course of a derivation, only a single advancement to the subject role was possible. This law was called the "1 Advancement Exclusiveness Law" (1AEX). With the 1AEX, the Final 1 Law, and the notion of unaccusativity, the scene was set for some exciting predictions, for it was the interaction of these laws that led Perlmutter (1978) to some generalizations that have influenced nearly all subsequent work on unaccusativity.

Perlmutter (1978) argued that if there could be only one advancement to the subject role, and if unaccusative sentences always involved a direct object becoming a subject, then we get the prediction that an unaccusative sentence cannot be passivized. Generating a passive sentence from an unaccusative sentence would have to involve two advancements to the subject role, a violation of the 1AEX. And this prediction is pretty much borne out: the types of predicates that were hypothesized to involve a 2-to-1 advancement cannot, in general, be made passive (Perlmutter, 1978: 169ff). Perlmutter argues that this prediction shows that the advancement analysis of

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[2]The term 'unaccusative' was suggested by Geoffrey Pullum, as noted by Perlmutter (1978: 186, footnote 4) and Perlmutter and Postal (1984: 95).

[3]Previous authors, notably Hall (1965) and Postal (1962), had proposed analyses of intransitive, non-passive sentences in which the subject was a moved direct object, as Pullum (1991: 147–158) and others have pointed out.

the passive is superior to the spontaneous demotion analysis. To put the argument in non-RG terms: the fact that unaccusatives cannot be passivized shows that the passive is best analyzed as involving a transformation in which the object forces out the subject rather than one in which the subject spontaneously becomes an adjunct. If subjects could spontaneously demote themselves, then unaccusative sentences could be passivized: an object would become a subject, then spontaneously demote itself, and then a dummy 2 would advance to the subject role (as occurs in impersonal passives of unergatives) But this does not happen.

Several aspects of the genesis of the unaccusative hypothesis are worth highlighting because they either directly or indirectly framed subsequent thinking on unaccusativity. First, the term 'unaccusative' refers not to a type of verb, but to a type of clause at a particular "stratum" of grammatical relations: one in which the single argument in the sentence is a 2 at the initial level of grammatical relations—an "Initial-2" (in transformational terms: at start of the derivation), and there is no 1. This terminological point underscores a broader point that is argued for in this dissertation, that it is not verbs themselves that are unaccusative, but verb phrases.

Another important feature of the original formulation of unaccusativity in RG is the fact that it refers to an "underlying" level of grammatical relations. As noted above, we might think of the notion of the initial level of grammatical relations as, in transformational terms, the underlying structure of a derivation. Unaccusativity could only be an underlying structure in RG because at the final level of grammatical relations, every sentence has to have a subject, in accordance with the Final 1 Law (Perlmutter, 1978: 160); there could be no sentence with a 2 (direct object) and no 1 at the final level. In other words, if there was no other element in the sentence (like a

dummy) that could be a subject, then a direct object always had to become a subject at the final level of grammatical relations.

The concept of unaccusativity in RG thus came bundled with an analysis involving advancement of direct object to subject. As a result, the conception of unaccusativity in non-RG work is often accompanied by an assumption that an unaccusative sentence always involves movement of a direct object to subject position. On the one hand, this is understandable, given the strong subject requirement in languages like English. But on the other hand, this assumption has been adopted to such an extent that sometimes the definition of an unaccusative clause is simply that it is a clause in which a direct object becomes a subject (e.g., Alexiadou et al., 2004: 2).

It is important to distinguish the notion of unaccusativity from an analysis of an unaccusative clause in which "object becomes subject". One reason this distinction is important is because some languages appear not to enforce a requirement that main clauses have subjects (whether this requirement is called the Final 1 Law (RG), the subject condition (LFG) or the EPP). Another reason for caution is the fact that subjecthood and objecthood are not primitive notions in current generative syntax (as noted by Rosen, 1984: 71–72); I will discuss this point further below. Finally, there is evidence (often from non-Germanic languages) that a clause can be unaccusative at "surface structure." I will discuss such data below in relation to an important distinction made by Levin and Rappaport Hovav (1995), the relation between "deep" and "surface" unaccusativity.

2.1.1   A definition of unaccusativity

As we have seen, an unaccusative sentence in RG is one in which the single argument of the predicate is a 2 at the initial level of grammatical relations, an Initial-2 (Perlmutter, 1978: 160). An unergative sentence is one in which the single argument is a 1 at the start of the derivation, an Initial-1. When these definitions are taken into a contemporary generative framework, it is not immediately clear what the formal notion Initial-2 translates into. How are we to think of direct objecthood when 'direct object' is not a primitive in our theory?

In a current generative approach, we can think of 'subject' and 'direct object' as terms that picks out DPs that receive their case by means of being in particular structural configurations; this definition sets aside DPs that receive case from being in a relationship with a head (e.g., a preposition) that assigns inherent case. I will use the notion of abstract Case, along with the notion of internal vs. external argumenthood to define 'direct object' and unaccusativity. A 'direct object', then, is a VP-internal argument that requires structural case. An unaccusative sentence can then be defined as a sentence that has a VP-internal argument requiring structural case and that does not have an external argument. Using the symbols $+$ and $-$ to indicate the presence or absence of these properties, (14) provides the working definition of an unaccusative sentence that I will use.

(14)   Unaccusative sentence

      a. $-$external argument

      b. $+$VP-internal argument requiring structural case

These properties also provide working definitions for transitive and unergative sentences, as shown in (15)–(16).[4]

(15)   Transitive sentence

    a.   +external argument

    b.   +VP-internal argument requiring structural case

(16)   Unergative sentence

    a.   +external argument

    b.   −VP-internal argument requiring structural case

Let us now return to the definition of unaccusativity. Part (14a) of the definition means that in an unaccusative sentence, no constituent is externally merged to the specifier position associated with structural case that is above VP. Part (14b) of the definition leaves open the possibility of unaccusative sentences whose argument DPs originate in a number of structural positions. This part of the definition builds on the longstanding insight that the subjects of ECM clauses pattern with direct complements of V (i.e., with standard "direct objects"): both are VP-internal and receive structural accusative case. The fact that there are two VP-internal positions that require structural case in a language like English—two direct object positions—leads to the possibility that there are two structural ways for a clause to be unaccusative. I will argue English makes use of both of these direct object positions, resulting in two distinct unaccusative structures.   The single argument in an unaccusative sentence

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[4]Sentences with no direct object but with dative or experiencer subjects may complete the types of sentences described by the combinations of these two features: [−external argument, −VP-internal argument requiring structural case]. The Icelandic "impersonal active" construction also appears to be covered by this combination (see Wood 2012 and references therein).

can therefore be merged as a standard direct complement to a verb, or as a small clause subject.

The notion that there are two structural "direct object" positions is one that comes up in Moro's (1997) discussion of Italian *ci* 'there' sentences as unaccusative. Although Moro (1997) does not ultimately analyze these sentences as unaccusative, we can see now that he was on the right track. The trees below, from Moro (1997: 220), show these two direct object positions (17).

(17)   Two kinds of direct objects
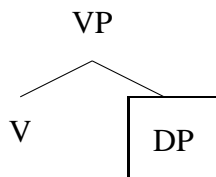
  A.   "Standard" Direct Object   B.   Small Clause Subject
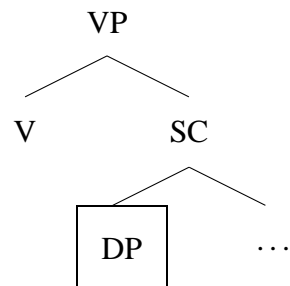
Both of the DPs in (17) are direct objects: they share the property of being VP-internal (c-commanded by the verb), and they are both in positions that require structural case. These configurations are analogous to the two unaccusative structures I propose. We can see, then, how the proposal adheres to the definition of unaccusativity.

2.1.2 Summary

This section started by observing that 'unaccusative' was originally defined in the framework of Relational Grammar, a framework in which 'direct object' was a primitive. I argued that in a contemporary, generative approach to syntax, the notion of direct objecthood can be formulated in terms of structural position and Case: a direct object is a VP-internal argument that requires structural Case. This clarification provided us with a working definition of unaccusativity: an unaccusative sentence is one with no external argument and a single, VP-internal argument requiring structural Case. I then pointed out that two structural positions satisfy the definition of direct objecthood: complements of V ("standard" direct objects), and small clause subjects. These two types of direct objects form the basis of my proposal for two distinct unaccusative structures, one for change of state verbs like *break*, and one for *arrive*-type verbs. These two structures correspond roughly to a well-known semantic split in the class of unaccusative predicates, as I discuss further below.

Before continuing on to the details of the proposed analysis, we must first look at some diagnostics for unaccusativity in languages other than English. Languages like Italian and Russian have unaccusativity tests that cut across different semantic subtypes of verbal roots and show that direct objecthood, defined as above, is at the core of unaccusativity. We will see that English lacks the kinds of unaccusativity diagnostics that languages like Italian and Russian have; each unaccusativity diagnostic in English works only for certain semantic subsets of verbal roots. I will discuss how the challenges in diagnosing unaccusativity in English come in part from the fact that English has a strong subjecthood requirement for finite sentences (the EPP).

But I will also show that the interfaces with syntax give us insight into unaccusativity in English: evidence from prosody shows that simple all-new unaccusative sentences of both types distinguish themselves from unergative sentences in domains for phrase stress. The syntax-information structure interface shows that only one of the structures satisfies the criteria for establishing new discourse referents in the same way that transitive structures do. In other words, the syntax-prosody facts provide us with an unaccusativity diagnostic that works across semantic classes of verbs, while the syntax-information structure facts reveal a diagnostic that can tell us the type of unaccusative structure that we have.

2.2 Diagnosing unaccusativity: Evidence for internal arguments

2.2.1 Unaccusativity vs. unaccusative advancement

For any given intransitive sentence, how can we tell if the syntactic configuration is unaccusative? In asking whether a sentence is unaccusative, what we are really asking about is the nature of the single argument in that sentence: is that argument an external argument, or is it an internal argument? Recall our definition of unaccusativity from (14), repeated below as (18):

(18)   Unaccusative sentence

      a.   −external argument

      b.   +VP-internal argument requiring structural case

Unaccusativity diagnostics can be seen as focusing on part (18b) of the definition. The logic of unaccusativity diagnostics is generally as follows: In an intransitive sentence, does the single argument DP have the properties of a transitive direct object? If the answer is yes, then the single argument of that sentence is said to be either overtly or underlyingly a direct object.

I have been careful in this and the preceding discussion to refer to the "single argument" in an intransitive sentence, rather than calling it the "subject" of the intransitive sentence, as is often done. One reason to choose the more neutral term is simply to be clear about the fact that for any given sentence that has a single argument DP, we do not know whether that DP is a direct object (merged VP-internally) or an external argument (merged VP-externally). The fact that the single argument in an intransitive sentence is often referred to as a 'subject' has created confusion in the past, particularly in work on English (though also in work on Russian, as we will see). From an English perspective, it is tempting to refer to all arguments of intransitive verbs as 'subjects,' since they (almost always) occur pre-verbally and in a position we associate with subjecthood, as illustrated in (19).

(19)   English "subjects"

    a.   <u>Some hippies</u> arrived.
    b.   <u>Some hippies</u> danced.

As I have discussed above, this confusion may be due to the strong EPP requirement in English. If a sentence like (20) were possible in English, we might be less tempted to use the term 'subject' for the single argument of unaccusative verbs, since *some hippies* in (20) is not in the usual position associated with subjecthood.

(20)   *Arrived <u>some hippies</u>.

As we have seen, the notion of unaccusativity was wrapped up with the notion of advancement to subjecthood in RG, since every sentence had to have a 1 (subject) in the final level of grammatical relations, in accordance with the Final 1 Law. As we have seen, one way for a sentence to satisfy the Final 1 Law was by what was called "unaccusative advancement": an Initial 2 could be promoted to being a Final 1. But Perlmutter and Postal made the point that unaccusativity and unaccusative *advancement* are separate notions: "The unaccusative hypothesis alone does not determine" whether an Initial 2 becomes a Final 1 through 2-to-1 advancement (Perlmutter and Postal, 1984: 96). And they note that in some unaccusative clauses, a constituent other than an initial 2 gets promoted to 1 (Perlmutter and Postal, 1984: 96).[5]

Despite the distinction between unaccusativity and unaccusative advancement, much of the discussion of 2-to-1 advancement focused on unaccusative sentences (Rosen 1984: 43; Perlmutter 1978: 166). Another reason for this focus was because much of this early work focused on Germanic languages, where 2-to-1 advancement almost always occurs. And 2-to-1 advancement is what makes the sentences in (19) look superficially similar; it is also why an unaccusative analysis of (19a) is so interesting and insightful in capturing the the different properties of the two sentences in (19).

But here and in the following discussion, I will strive to keep distinct the notions of unaccusativity and unaccusative advancement. If unaccusativity is conflated

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[5]As an example, Perlmutter and Postal give the sentence, *There exist purple gorillas* (Perlmutter and Postal, 1984: 120).

with 2-to-1 advancement, the definition of unaccusativity becomes something like a sentence in which "a direct object becomes a subject." When we look at languages with less strict EPP requirements (or with a V2 requirement, complicating things further), we see that when the single argument of a clause is a direct object, that argument does not always move to a position associated with subjecthood. In fact, the most robust and well-known tests for unaccusativity are those in which the single argument in a clause is a direct object that remains VP-internal.

2.2.1.1 Deep unaccusativity and surface unaccusativity

Levin and Rappaport Hovav (1995: 17ff.) distinguish between two types of unaccusativity diagnostics. This distinction has the potential to help us tell the difference between unaccusativity by itself, and unaccusativity accompanied by movement to a subject position (2-to-1 advancement, in RG terms). This distinction is called "deep" versus "surface" unaccusativity. These labels use the terminology of earlier generative approaches to syntax, one in which deep structure and surface structure were relevant notions. But the distinction in unaccusativity diagnostics is very important, though I will show later on that it has some limitations. A diagnostic for "deep" unaccusativity is one that shows that the single argument in an intransitive clause is VP-internal (a direct object) at "deep structure" but has since moved from that position.

Deep unaccusativity tests generally have the following logic: a property of transitive direct objects is identified, and then we apply diagnostics to see if the single, pre-verbal argument in an intransitive sentence has that property. If the argument has the direct object property, then we conclude that the argument was first merged

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(at "deep structure") to a VP-internal argument position—it started out in the derivation as a direct object. In RG terms, deep unaccusativity diagnoses the case of an initial 2 that undergoes 2-to-1 advancement. English is a language that has primarily only has deep unaccusativity tests (with the exception of *there*-insertion, as I discuss below). In English, we almost never have an intransitive sentence with the single argument in its first-merged, VP-internal position.

Surface unaccusativity tests, on the other hand, are those that diagnose in-situ direct objecthood: the single argument in an intransitive sentence is in a VP-internal position at both deep and surface structure. If VP-internal movement is assumed, then the deep and surface structure positions are both VP-internal. In RG terms, we might say that a surface unaccusativity test is one that diagnoses unaccusativity that is *not* accompanied by 2-to-1 advancement.

Before turning to unaccusativity tests in English, we will turn to some widely-cited unaccusativity tests in other languages so that we can see surface unaccusativity diagnostics at work. These tests are very useful in revealing when the single argument in an intransitive sentence has object-like properties and when it does not. Furthermore, these diagnostics show that when the argument is a direct object, it can (and sometimes must) remain VP-internal. Finally, we will see that these diagnostics do not differentiate between subclasses of unaccusative verbs in these languages. In this way, these diagnostics are in a sense purely structural, insensitive to semantic factors. Because in this section we are interested in unaccusativity tests that are straightforwardly structural, I will not be discussing auxiliary selection in languages with HAVE/BE alternation. This is because auxiliary selection has been shown to

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be affected by semantic factors such as agentivity and telicity (see e.g., Sorace 2000, Bentley and Eythórssón 2003, Sorace 2003).

2.2.2 Diagnosing direct objecthood in Italian: the clitic *ne*

The Italian clitic *ne* 'of them' can be used to pronominalize quantified NPs. The distribution of this clitic shows that it can be extracted from direct objects only. Furthermore, the direct object that it is extracted from must remain VP-internal. *Ne*-cliticization (also called "*ne*-extraction") is thus a surface unaccusativity test: the single argument in the sentence is VP-internal at both "deep structure" and "surface structure". The examples in the following paragraphs review the *ne*-cliticization facts and show that *ne* requires its antecedent to be a VP-internal direct object.

The sentences in (21) are adapted from the well-known examples of Burzio (1986), and they show that *ne* can occur with the direct object in a transitive sentence.[6]

(21)   *Ne*-extraction from a transitive direct object   (Italian)

    a.   Giovanni inviterà   molti esperti
           Giovanni invite-will many experts
           John will invite many experts

    b.   Giovanni **ne**   inviterà   molti
           Giovanni of-them will-invite many
           John will invite many of them

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[6]For those unfamiliar with *ne*-cliticization, it can be useful to think of these sentences as involving an ongoing discourse; for example, (21b) might be an answer to the question, "What about the experts?"

Although I will not show the movement of *ne* in all the examples here, it should be noted that in the standard analysis of *ne*-cliticization, *ne* originates in the constituent from which it is extracted and subsequently moves to a clitic position where it c-commands its copy (shown in (22) as a trace). *Ne*-cliticization also triggers past participle agreement Burzio (1986: 60), though that is not of direct relevance here.

(22)   Giovanni **ne**$_i$ inviterà [molti t$_i$]

As mentioned above, it is not sufficient for the antecedent of *ne* be a direct object: the direct object must also stay in a VP-internal position. If the direct object moves, *ne*-cliticization is no longer possible. This is shown in the following examples, from Burzio (1986: 23–24, 26), with passive sentences (23).[7] Sentences (23a)–(23b) show that *ne* is acceptable with passives, and (23c) shows that for *ne*-cliticization to be acceptable, the direct object antecedent must remain VP-internal.

(23)   *Ne*-extraction not allowed from a moved direct object   (Italian)

    a.   [Molti esperti]$_i$ saranno invitati t$_i$
           many   experts   will-be   invited
           Many experts will be invited

    b.   **Ne**$_i$ saranno invitati [molti t$_i$]
           of-them will-be invited many
           Many of them will be invited

    c. *Molti **ne**   saranno invitati
           many of-them will-be invited
           Many of them will be invited

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[7]See also Rosen (1984: 50).

We now turn to examples showing that *ne* cannot be extracted from external arguments (24). Example (24b) in this paradigm shows that post-verbal subjects are acceptable in Italian. Example (24c) shows that even when the subject is post-verbal, *ne*-cliticization is not possible. This fact shows that what matters for *ne*-cliticization is the structural relationship, c-command, not surface word order.

(24) No *ne*-extraction from post-verbal external argument   (Italian)

    a. [Molti esperti] esamineranno il   caso
        Many experts examine-will the case
        Many experts will examine the case

    b. Esamineranno il   caso [molti esperti]
        examine-will   the case many experts
        Many experts will examine the case.

    c. ***Ne**   esamineranno il   caso [molti t$_i$]
        Of-them examine-will the case many
        Many of them will examine the case

Now that we have seen that *ne*-cliticization diagnoses in-situ direct objects, we will now consider *ne*-cliticization as a surface unaccusativity test. We will see that sometimes *ne* can be extracted from the single argument of an intransitive sentence, and sometimes it cannot. Classic examples like the ones in (25)–(26) with *arrivare* 'to arrive' and *telefonare* 'to telephone' were crucial in motivating the split in the class of intransitive verbs into unergative and unaccusative. These examples are adapted from Burzio (1986: 20–21).

First, observe that *ne*-cliticization is acceptable with the single argument of *arrivare* (25). This shows that the argument of *arrivare* patterns like transitive direct objects in this property.

(25)   *Ne*-extraction from internal argument (*arrivare*)   (Italian)

     a.   [Molti esperti]$_i$ arriveranno t$_i$
           Many experts arrive-will
           Many experts will arrive

     b.   **Ne**$_i$ arriveranno [molti t$_i$]
           Of-them arrive-will   many
           Many of them will arrive

Ne-cliticization is not acceptable from the single argument of *telefonare* (26). This shows that the single argument of *telefonare* has a different status from that of *arrivare*; it is not a direct object.

(26)   No *ne*-extraction from external argument (*telefonare*)   (Italian)

     a.   Molti esperti telefoneranno
           Many experts telephone-will
           Many experts will telephone

     b.   ***Ne**   telefoneranno molti
           Of-them telephone-will many
           Many of them will telephone

The facts in (25)–(26) show that the argument of *arrivare* patterns with transitive direct objects (21b) in allowing *ne*-cliticization. Furthermore, just as we saw that transitive direct objects must stay VP-internal in order for *ne*-cliticization to be acceptable, we also see that in intransitive sentences, the single argument must stay VP-internal in order for *ne*-cliticization to be acceptable, as shown in (27). These examples show that *ne*-cliticization diagnoses *surface* unaccusativity: *ne*-cliticization diagnoses a direct object that is VP-internal at surface structure.

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(27)   *Ne*-cliticization: Direct object is VP-internal   (Italian)

    a.   Ne$_i$ arriveranno [**molti** t$_i$]
            Of-them arrive-will   many
            Many of them will arrive

    b.   ***Molti** ne   arriveranno
            Many of-them arrive-will
            Many of them will arrive

One of the points Burzio makes is that *ne*-cliticization is purely structural: it is not affected by semantic factors (Burzio, 1986: 22ff). As long as an argument is a direct object (and quantified), *ne*-cliticization is acceptable. We have already seen one example in support of this in (23), where it was shown that *ne* can be extracted from the single argument in a passive sentence. But *ne*-cliticization is also blind to semantic subclasses of unaccusative predicates, and this makes it unlike the standard unaccusativity tests in English, as we will see.

    Like English, Italian has verbs that pass unaccusativity tests but that also allow transitivity alternations. These are often change of state verbs like *affondare* 'to sink'. In the literature, verbs that alternate are sometimes referred to as "ergative", while verbs like *arrive* that do not alternate are called "unaccusative". Because the ergative/unaccusative terminology can be confusing, I will continue to refer to all verbs that pass unaccusativity tests as unaccusative.[8]

    Although change of state verbs like *affondare* 'to sink' can often occur in transitive structures, when intransitive they pass the *ne*-cliticization diagnostic just as *arrivare* 'to arrive' does. Example (28) with *affondare* 'to sink' is from Burzio (1986: 25).

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[8]To add to the terminological confusion, Burzio (1986) uses 'ergative' to refer to both classes of unaccusatives, and he refers to unergatives as 'transitive' (Burzio, 1986: 29–30).

(28)   Transitivity alternations and *ne*-cliticization with *affondare* 'to sink' (Italian)

      a.   L'artiglieria affondò molte navi nemiche
            the-artillery sank   many ships enemy
            The artillery sank many enemy ships

      b.   Molte navi nemiche affondarono
            many ships enemy   sank
            Many enemy ships sank

      c.   **Ne**   affondarono molte
            of-them sank   many
            Many of them sank

Turning to another change of state verb, *bruciare* 'to burn', we see the same pattern.

Let us first observe the facts with transitive *bruciare*: *ne*-cliticization is possible with

the transitive direct object of *bruciare* (29), but it is not possible with the external

argument (30).[9]

(29)   ✓ *ne*-extraction from internal argument of *bruciare* 'to burn'   (Italian)

      a.   I   figli dei   fiori   bruciarono molto incenso
            The sons of-the flowers burned   much incense
            The hippies burned a lot of incense

      b.   I   figli dei   fiori   **ne** bruciarono molto
            The sons of-the flowers of-it burned   much
            The hippies burned a lot of it

(30)   * *ne*-extraction from external argument of *bruciare* 'to burn'   (Italian)

      a.   Molti figli dei   fiori   bruciarono incenso
            Many sons of-the flowers burned   incense
            Many hippies burned incense

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[9]Thanks to Francesca Delogu for data and judgments in (29)–(34).

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b. *__Ne__   bruciarono incenso molti
    of-them burned   incense many
    Many of them burned incense

When *bruciare* 'to burn' occurs in an intransitive sentence, *ne*-cliticization is acceptable with the single argument (31). *Ne*-cliticization thus diagnoses this argument as an internal argument.

(31)   *Ne*-extraction with internal argument of intransitive *bruciare* 'to burn' (Italian)

    a.   Molto incenso bruciò
        much incense burned
        Much incense burned

    b.   __Ne__ bruciò molto
        of-it burned much
        Much of it burned

The pattern with transitive *rompere* 'to break' is the same, as shown in (32)–(33).

(32)   ✓ *ne*-extraction from internal argument of transitive *rompere* 'to break' (Italian)

    a.   I   bambini hanno rotto   molti vasi
        The kids   have   broken many vases
        The kids broke many vases

    b.   I   bambini __ne__   hanno rotti   molti
        The kids   of-them have   broken many
        The kids broke many of them

(33)   * *ne*-extraction from external argument of transitive *rompere* 'to break' (Italian)

a. Molti bambini hanno rotto   un vaso
Many kids   have   broken a vase
Many kids broke a vase

b. ***Ne**   hanno rotto   un vaso molti
Of-them have   broken a   vase many
Many of them broke a vase

When *rompere* 'break' is intransitive, its single argument allows *ne*-cliticization, though it differs from *bruciare* 'burn' and *affondare* 'sink' in that a reflexive clitic is required, as shown in (34).

(34)   ✓ *ne*-extraction with intransitive *rompere* 'break'   (Italian)

a. Si   sono rotti   molti vasi
REFL are   break-PP many vases
Many vases broke

b. Se   **ne**   sono rotti   molti
REFL of-them are   break-PP many
Many of them broke

2.2.2.1   *Ne*-extraction in copular and existential sentences

The *ne*-cliticization facts for copular and existential sentences are particularly interesting because they suggest that there are important structural differences between existential and copular sentences. This is an idea that I will return to when we discuss unaccusativity in Russian, and again in English.

As Burzio (1986: 30–31) discusses, *ne*-cliticization is generally not possible from first DP in copular sentences.[10]

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[10]Thanks again to Francesca Delogu for data and judgments in (35)–(41).

(35)   Predicate adjectives: No *ne*-extraction   (Italian)

      a.   Molti figli dei   fiori   sono simpatici
            many sons of-the flowers are   friendly
            Many hippies are friendly

      b.   ***Ne**   sono molti simpatici
            of-them are   many friendly
            Many of them are friendly

(36)   Predicate nominals: No *ne*-extraction   (Italian)

      a.   Molti studenti sono figli dei   fiori
            many students are   sons of-the flowers
            Many students are hippies

      b.   ***Ne**   sono molti figli dei   fiori
            of-them are   many sons of-the flowers
            Many of them are hippies

The data in (35)–(36) show that the first DP in these sentences is never in a VP-internal position, and that it is perhaps an external argument.

    Data from Cinque (1990), however, shows that the picture is more complicated and that the type of predicate adjective makes a difference. Cinque (1990) shows that there is a class of adjectives that allow *ne*-cliticization from their subjects and therefore should be analyzed as 'ergative' (i.e., unaccusative). Cinque (1990) argues that *noto* 'well-known' and *probabile* 'likely' are two such adjectives, as shown in (37).

(37)   "Ergative" [unaccusative] adjectives from Cinque (1990: 7)[11]

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[11]These examples and glosses are from Cinque (1990); thanks to Francesca Delogu for the translations.

    a.   Ne   sono note   solo alcune (delle sue poesie)
        of-them are   well-known only some (of   his poems)
        Only some of them are well-known

    b.   Ne   sono probabili ben   poche (di dimissioni)
        of-them are   likely   really few   (of resignations)
        Really few of them are likely

I will set these data aside for now, though as we will see further along, copular sentences clearly call for further research.

Recall that our definition of direct objecthood picks out two structural positions, a simple direct object and a small clause subject; *ne*-cliticization should be acceptable from either of these direct object positions. The fact that *ne*-cliticization is not possible with (35)–(36) suggests that the structure of these sentences is not a that of a SC. If *molti figli dei fiori* 'many hippies' in (35) were a SC subject, for example, then we would expect that *ne*-extraction would be acceptable. In other words, even though we might be inclined to say that the predicate in (35)–(36) is "small," the *ne*-cliticization facts show that a small clause analysis of most copular sentences is not right.

When we turn to existential and locative sentences, we see that *ne*-cliticization is acceptable, as shown in (38).

(38)   ✓ *ne*-extraction in locative/existential sentences   (Italian)

    a.   Ci   sono molti figli dei   fiori   nel   parco
        there are   many sons of-the flowers in-the park
        There are many hippies in the park

    b.   Ce   **ne**   sono molti nel   parco
        there of-them are   many in-the park
        There are many of them in the park

The data in (38) are surprising if all existential and copular sentences were to have the same structure. Furthermore, copular sentences are not generally thought to have direct objects, and yet the sentences in (38) allow *ne*-cliticization, a diagnostic for direct objecthood. When we view these data in light of the structural definition of direct objecthood that I have presented, however, these data are less surprising.

The constituent that allows *ne*-extraction must be merged to one of the two VP-internal argument positions requiring structural case. While it is unlikely that *figli dei fiori* 'hippies' in (38) is a "standard" direct object, it is not surprising that it would be a small clause subject. The structural definition of direct objecthood predicts that *ne*-cliticization would then be acceptable.

(39)   *Many hippies are in the park*: [many hippies] is a VP-internal argument
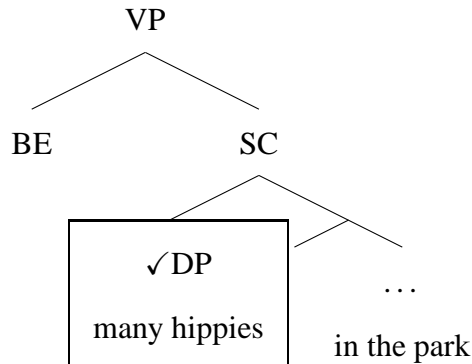
Some sentences that are superficially similar to the predicate adjective and predicate nominal sentences in (35)–(36) are in fact acceptable with *ne*-cliticization; this is when the structure is that of an existential sentence. Given a context such as (40a), the sentences in (40b)–(40c) are acceptable; note that *ne* in these sentences refers to *molti studenti* 'many students'.

(40) *Ne*-extraction with other locative/existential sentences, with context (Italian)

    a.   Molti studenti sono figli dei   fiori
           many students are   sons of-the flowers
           Many students are hippies

    b.   Ce   **ne**   sono molti figli dei   fiori
           there of-them are   many sons of-the flowers
           There are many of them (who are) hippies

    c.   Ce   **ne**   sono molti simpatici
           there of-them are   many friendly
           There are many of them (who are) nice

Further evidence that small clause subjects pattern with transitive direct objects comes from the fact that *ne*-cliticization is acceptable with ECM subjects in Italian. In (41), for example, the quantified subject of the embedded clause *molti figli dei fiori* 'many hippies' allows *ne*-cliticization.

(41) *Ne*-extraction in ECM sentences   (Italian)

    a.   Io considero molti figli dei   fiori   simpatici
           I   consider   many sons of-the flowers friendly
           I consider many hippies to be friendly

    b.   Io **ne**   considero molti simpatici
           I of-them consider   many friendly
           I consider many of them to be friendly

Although a consideration of ECM is beyond our scope here, these data reinforce the notion that direct objecthood can be translated into contemporary generative syntax in terms of specific VP-internal syntactic positions requiring structural case.

    It should be noted that the data for copular sentences in Italian are complicated by the fact that *ne*-cliticization is possible with some predicate nominal

sentences—in particular, with the types of DP-DP copular sentences that are the main concern in Moro (1997). These sentences do allow *ne*-cliticization, as shown in (42b) (Moro, 1997: 60, example 94a).

(42)   DP-DP copular sentences with *ne*-cliticization   (Italian)

     a.   [$_{DP}$ una foto   del   muro] fu [$_{DP}$ la causa della rivolta]
         [$_{DP}$ a   picture of-the wall] was [$_{DP}$ the cause of-the riot]
         a picture of the wall was the cause of the riot

     b.   [$_{DP}$ una foto   del   muro] ne$_i$ fu [$_{DP}$ la causa t$_i$]
         [$_{DP}$ a   picture of-the wall] of-it was [$_{DP}$ the cause]
         A picture of the wall was the cause of it

Moro argues convincingly that sentences like (42) have a small clause structure. These data are particularly interesting because the DP that allows *ne*-extraction is not quantified but is in a possessive structure.[12]

In addition, some copular sentences pass the French unaccusativity test that has been called "partitive *en*" or *en*-cliticization.[13] Pollock (1998), for example, discusses the fact that although partitive *en* in French patterns very closely with *ne*-cliticization in Italian, partitive *en* is acceptable in some copular sentences which, in Italian, would not allow *ne*-cliticization. One such sentence is shown in the paradigm in (43), from Pollock (1998).[14]

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[12]See Giusti (1991) and elsewhere for discussion of the distribution of partitive vs. quantified DPs and *ne*.

[13]Space limitations do not permit a complete discussion of French unaccusativity diagnostics. See Legendre (1987), Ruwet (1988) and Legendre (1989) for important early discussions of unaccusativity in French. For a recent discussion of *en*-cliticization as an unaccusativity diagnostic, see Legendre and Smolensky (2009).

[14]Thanks to Vincent Chanethom for helpful discussion of the French data.

(43)   *En*-cliticization in transitive and copular sentences (Pollock, 1998: 307)

(French)

    a.   Le premier chapitre de ce   livre est intéressant
           the first   chapter of this book is interesting
           The first chapter of this book is interesting

    b.   Le premier chapitre en   est intéressant
           the first   chapter of-it is interesting
           The first chapter of it is interesting

Sentences like (43b) are not acceptable for all French speakers, however. Some speakers who readily accept *en*-cliticization in transitive sentences do not accept it in all of the copular sentences that Pollock (1998) discusses. This is shown in (44).

(44)   Variation in *en*-cliticization in copular sentences

    a.   Elle en a   lu   le premier chapitre
           She of-it has read the first   chapter
           She read the first chapter of it

    b. ??Le premier chapitre en   est intéressant
           the first   chapter of-it is interesting
           The first chapter of it is interesting

    c.   Le premier chapitre y   est intéressant
           the first   chapter there is interesting
           The first chapter of it is interesting

These data show that further research must be done to determine the relationship between existential sentences and some copular sentences with respect to unaccusativity diagnostics. Although I have stressed the structural differences between existential and copular sentences, it is likely that there is more than one copular structure, and that at least some non-locative copular sentences do not have external arguments.

45

2.2.3 Diagnosing direct objecthood in Russian: The "genitive of negation"

Like Italian, Russian has a construction that robustly diagnoses the VP-internal status of arguments. This diagnostic is called the "genitive of negation" (henceforth Gen-Neg). Pesetsky (1982) is acknowledged as first observing that the Russian Gen-Neg could be used as an unaccusativity test, although the literature on the phenomenon of Gen-Neg in general goes much further back (see Harves, 2002: 40). Like *ne*-cliticization, Gen-Neg shows that a property of transitive direct objects holds for the single argument in some intransitive sentences, for the DP argument in existential/locative sentences, and for the "subjects" of passive sentences. We will see that Gen-Neg has similarities to *ne*-cliticization in picking out, without regard for semantic class, the two types of direct objects that I have been discussing. These structural requirements make Gen-Neg a surface unaccusativity test.

But we will also see that Gen-Neg adds some complexity to the picture. Sentences with Gen-Neg are associated with particular semantic interpretations that make relevant the syntax-information structure interface. These additional factors make Gen-Neg a more complex phenomenon than *ne*-cliticization, but one that sheds light on the effects of unaccusativity that we will see in English at the interfaces. In the paragraphs below, I first present the basic Gen-Neg facts before discussing the more complex matters involving interpretation and information structure.

The sentences in (45) show the Gen-Neg pattern. Transitive direct objects in Russian often receive accusative case, as shown in (45a) with the verb *kupit* 'to

buy'. When this sentence is negated, the direct object can receive genitive rather than accusative case, as shown in (45b), adapted from Harves (2002: 34).[15]

(45)   Transitive direct objects allow Gen-Neg   (Russian)

    a.   Anna   kupila knigi
        Anna-NOM bought books-**ACC**
        Anna bought the books.

    b.   Anna   ne   kupila knig
        Anna-NOM **NEG** bought books-**GEN**
        Anna did not buy (any) books

Further along, I will discuss the fact that the direct object in (45b) does not have to receive genitive case and the fact that referential DPs do not generally participate in Gen-Neg.

    Just as we saw with *ne*-cliticization, external arguments do not participate in Gen-Neg: in a negated sentence, external arguments are nominative, not genitive. This is shown in (46), adapted from Harves (2002: 76).

(46)   External arguments do not allow Gen-Neg   (Russian)

    a.   *Ni odnogo studenta   ne   čitalo *Vojnu i   Mir*
        not one   student-**GEN** NEG read   War   and Peace
        Not a single student read War and Peace

    b.   Ni odin student   ne   čital *Vojnu i   Mir*
        not one student-**NOM** NEG read War   and Peace
        Not a single student read War and Peace

---

[15]Thanks to Inna Livitz for data, judgments, and discussion of the Russian data here and below.

Example (46a) shows that even if the external argument is itself a negated DP, Gen-Neg is not possible.

We turn now to intransitive sentences. Just as we saw with *ne*-cliticization in Italian, we see that Gen-Neg is possible with the single argument in some intransitive sentences but not with others. This diagnostic divides intransitive sentences into two types, those whose single argument is VP-internal, for which Gen-Neg is acceptable, and those whose single argument is VP-external, for which Gen-Neg is not acceptable. These patterns are shown in (47). The argument of *prijti* 'to come' receives nominative case when the sentence is affirmative (47a), but this argument can be genitive when the sentence is negated (47b).

(47)   Affirmative and negated unaccusative sentences   (Russian)

     a.   Prišel   ovtet
           arrived answer-**NOM**
           An answer came

     b.   Ne   prišlo otveta
           NEG arrived answer-**GEN**
           No answer came

In contrast, the argument of *pet'* 'to sing' must be nominative in both affirmative and negated sentences. The examples in (48) show acceptable affirmative and negated unergative sentences. It should be noted that (48b) is acceptable only with a specific reading for *devushka* 'girl', and (48c) has an indefinite/non-specific reading. I will address the issues of specificity and Gen-Neg in §2.2.3.1.

(48)   Affirmative and negated unergative sentences   (Russian)

a. Devushka pela
   girl-**NOM** sang-FEM.SG
   A girl sang

b. Devushka ne   pela
   girl-**NOM** **NEG** sang-FEM.SG
   A girl didn't sing

c. Ne   pela   devuska
   NEG sang-FEM.SG girl-**NOM**
   A girl didn't sing

The examples in (49) show that the single argument in an unergative sentence cannot be genitive, even if the subject is made post-verbal (49b) in order to allow a non-specific reading.[16]

(49)   Unacceptable negated unergative sentences   (Russian)

a. *Devushki ne   pelo
   girl-**GEN** **NEG** sang-NEUT.SG
   A girl didn't sing

b. *Ne   pelo   devushki
   NEG sang-NEUT.SG girl-**GEN**
   A girl didn't sing

This section has laid out the basic case-marking facts for Gen-Neg in Russian. The next sections show that these facts are made more complex by word order possibilities and the definiteness/specificity of the argument that receives genitive case.

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[16]But see Kasyanenko (2011) for data showing the extent to which Russian speakers accept Gen-Neg with predicates that are standardly considered unergative.

2.2.3.1 Word order and specificity in Gen-Neg sentences

It was shown above that a transitive direct object in a negated sentence in Russian can be genitive. But genitive case on the direct object is not obligatory. The sentences in (50) show that a transitive direct object in a negated sentence can be either accusative or genitive. The case markings come with interpretive differences, however.

(50)   Transitive Gen-Neg and definiteness/specificity   (Russian)

    a.   Anna   ne kupila knigi
         Anna-NOM NEG bought books-**ACC**
         Anna didn't buy some/the books

    b.   Anna   ne kupila knig
         Anna-NOM NEG bought books-**GEN**
         Anna didn't buy (any) books

As shown in the glosses for (50), the case alternations here are associated with interpretations having to do with definiteness and specificity. The interpretation of genitive arguments has been the subject of much discussion in the literature (see references in Partee and Borschev, 2006: 2). When the direct object of a negated sentence is genitive, this argument is interpreted as non-specific or indefinite (50b). When a direct object in a negated sentence is accusative, it can have *either* a definite or an indefinite interpretation, as shown in the gloss for (50a)—though it should be noted that the definite reading is strongly preferred. Sentence (50a) can thus be interpreted saying that it is not the case that Anna bought some specific set of books or that it is not the case that Anna bought any books. The definite reading is not available when the direct object is genitive.

One much-discussed twist in the Gen-Neg data is the fact that what have been called "referential" direct objects in transitive sentences generally cannot be genitive in negated sentences. The following sentences in (51) are from Harves (2002: 45) and have been discussed by Pereltsvaig (1999) and Babyonyshev (1996).

(51)   Referential direct objects resist Gen-Neg   (Russian)

  a. *Vanja ne   čital *Vojnu i   Mira*
   Vanya NEG read War   and Peace-**GEN**
   Vanya didn't read War and Peace

  b. Vanja ne   čital *Vojnu i   Mir*
   Vanya NEG read War   and Peace-**ACC**
   Vanya didn't read War and Peace

Pereltsvaig (1999: 18) named this phenomenon the "Referentiality Constraint." As Harves (2002) and Pereltsvaig (1999) discuss, these data are not without exception, and we will see that the Referentiality Constraint does not hold for the arguments of existential *byt'* 'to be'. Pereltsvaig's Referentiality Constraint does hold, though, for the argument of *prijti* 'to come', as shown in (52), adapted from Harves (2002: 162).

(52)   The "Referentiality Constraint" with *prijti* 'to come'   (Russian)

  a. *Ivana   ne prišlo
   Ivan-GEN NEG came
   Ivan didn't come

  b. Ivan   ne prišel
   Ivan-NOM NEG came
   Ivan didn't come

The interpretive alternations involving definiteness also occur with intransitive sentences. For example, when the argument of *prijti* 'to come' is non-specific/indefinite, it can occur in either the nominative or the genitive. When the argument is specific/definite, nominative is obligatory, as shown in (53).

(53)   Otvet   ne prišel
            answer-NOM NEG arrived
            ✓ *The answer didn't come*
            # *An answer didn't come*

The issue of definiteness/specificity is complicated by the tendency for a preverbal argument have a specific interpretation, and for a postverbal argument to have a non-specific interpretation. For example, in the affirmative sentence in (54), the argument *ovtet* 'answer' is potentially ambiguous between *the answer* and *an answer*.

(54)   Ovtet   prišel
            answer-NOM arrived
            ✓ *An answer came*
            ✓ *The answer came*

But this potential ambiguity is resolved by word order: the preferred order for a specific interpretation is argument-verb, and the preferred order for a non-specific interpretation is verb-argument. This is illustrated in (55).

(55)   Preferred interpretations in affirmative intransitive sentences   (Russian)

        a.   **Ovtet**   prišel
             answer-NOM arrived
             ✓ *The answer came*

> b. Prišel **ovtet**
> arrived answer-NOM
> ✓ *An answer came*

The sentences in (55) show that in affirmative intransitive sentences, the position of the single argument as preverbal or postverbal affects the interpretation of that argument. We now turn to negated intransitive sentences. As we have seen in transitive sentences, a Gen-Neg argument almost always has an indefinite interpretation. This is also the case with intransitive sentences. For example, in the negated sentences in (56), the genitive argument of *prijti* 'to come' has an indefinite/non-specific interpretation whether it precedes the verb (56a) or follows the verb (56b).

(56) Gen-Neg word orders in negated intransitive sentences (Russian)

> a. **Otveta** ne prišlo
> answer-**GEN** NEG arrived
> *No answer came*

> b. Ne prišlo **otveta**
> NEG arrived answer-**GEN**
> *No answer came*

In the literature on Gen-Neg, sentences like (56a) have attracted some attention. As Harves (2002: 34; 59ff) discusses, sentences like these led Babby (1980) to argue that Gen-Neg is not a diagnostic of unaccusativity. One of Babby's arguments, as described by Harves (2002: 59), is that if Gen-Neg diagnosed unaccusativity, then the argument of the verb should not be able to move from its VP internal position. Harves points out that the argument may leave the VP for orthogonal reasons. As I will discuss further below, Babby's purported counterexample to Gen-Neg as an

unaccusativity diagnostic (56a) highlights both the usefulness and the limitations of the notion of deep vs. surface unaccusativity.

2.2.3.2 Gen-Neg in existential and locative sentences

Just as *ne*-cliticization can occur in existential/locative sentences in Italian, Gen-Neg can occur in Russian existential *byt'* 'to be' sentences. This fact provides further support for a small clause analysis of existential sentences, since small clause subjects satisfy our definition of direct objecthood. There has been a great deal of literature on the syntax and semantics of existential sentences in Russian and Gen-Neg, and I will not be able to do justice to that literature here.[17] In this section I will present the basic facts on Gen-Neg in existential sentences and focus on the arguments that have been proposed to account for the fact that the genitive arguments in these sentences always receive an existential interpretation. The arguments by these authors inform my analysis of the complex complement unaccusative structure, the structure that roots like *arrive* occur in.

Recall that in a negated transitive sentence in Russian, the direct object can be either genitive or accusative (45). We saw similarly that in a negated unaccusative sentence (47), the single argument can be either genitive or nominative. In a negated existential sentence, in contrast, the single argument is obligatorily genitive: it cannot be nominative or accusative. This is shown in (57), data adapted from Partee and Borschev (2007: 147) and Harves (2002: 39) from Chvany (1975: 45).[18] In (57c), nominative case on *doktor* 'doctor' is unacceptable.

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[17]For an overview of the syntax of Russian existential sentences, see Harves (2002: Chapter 3); for an overview of the semantics, see Partee and Borschev (2007).

[18]Thanks again to Inna Livitz for data and judgments in (57)–(59).

(57)   Negated existential sentences require Gen-Neg   (Russian)

    a.   V gorode byl doktor
        in town   was doctor-**NOM**
        There was a doctor in town

    b.   V gorode ne   bylo doktora
        in town   **NEG** was doctor-**GEN**
        There was no doctor in town

    c. *V gorode ne   byl doktor
        in town   **NEG** was doctor-**NOM**
        There was no doctor in town

Like *ne*-cliticization, Russian Gen-Neg does not occur in copular sentences with predicative adjectives, as shown in (58), from Harves (2002: 166).

(58)   No Gen-Neg in predicative adjective sentences   (Russian)

    a. *Maši   ne   p'janaja
        Maša-GEN NEG-BE drunk-NOM
        Maša isn't drunk

    b. *Maši   ne   p'janoj
        Maša-GEN NEG-BE drunk-GEN
        Maša isn't drunk

    c. Maša   ne p'janaja
        Maša-NOM NEG drunk-NOM
        Maša isn't drunk

However, we can now see that one reason for why (58a)–(58b) might be unacceptable is because *Maša* is a specific, referential DP; Gen-Neg here violates the Referentiality Constraint. And yet as Harves (2002: 46) points out, if the sentence is locative, a specific referential DP *can* receive genitive, as shown in (59).

(59) Gen-Neg in negated locative sentence   (Russian)

    a. Maši   ne bylo doma
       Maša-GEN NEG was home
       Maša wasn't home

    b. *Maša   ne byla doma
       Maša-NOM NEG was home
       Maša wasn't home

The facts in (58)–(59) suggest that the single argument in (58c) is merged external to the VP—it is an external argument. In contrast, the single argument in the locative sentence in (59) is a direct object, merged VP-internally as the subject of a small clause.

2.2.3.3 Domains of existential interpretation

One line of research in the literature on Gen-Neg has particular relevance to the English data on unaccusativity at the interfaces. Babby (1980) argued that the Gen-Neg facts were best accounted for in terms of the information theoretic notions *theme* and *rheme*. Babby (1980) also claimed that the "scope of assertion" differs between what he called "declarative" and "existential" sentences. In existential sentences, the "scope" of the affirmation is the whole sentence. Table 2.1 summarizes Babby's claims (Babby 1980: 72; Partee and Borschev 2004: 214). In this table, "Scope of A" refers to scope of assertion, and *ne* is Russian NEG.

	AFFIRMATIVE		NEGATED
EXISTENTIAL	[$_{\text{Scope of A}}$VP NP]	$\Rightarrow$NEG	[$_{\text{ne}}$ VP NP$_{\text{gen}}$]
DECLARATIVE	NP [$_{\text{Scope of A}}$ VP]	$\Rightarrow$NEG	NP$_{\text{nom}}$ [$_{\text{ne}}$ VP]

Table 2.1: Scope of assertion (Babby 1980)

Babby (1980) connects the notion of "scope of affirmation" to a distinction in sentence interpretations that goes back to Kuroda (1972), the thetic/categorical distinction. Although this distinction has to do with how a listener interprets or "judges" sentences rather than the structure of sentences, theoretical linguists have found the distinction very useful.

Categorical sentences are said to involve two judgment acts on the part of a listener: the recognition of a subject, and the understanding of what is predicated of that subject, which the listener can affirm or deny. Thetic sentences involve just one judgment act, that of affirmation or denial (Ladusaw 1994: 3; see this paper for further discussion of the thetic/categorical distinction). The twin issues of "scope of affirmation" and the thetic/categorical distinction are relevant here because of the properties of English unaccusative sentences at the interfaces, as I discuss in Chapters 4 and 5.

Babby's notion of the "scope" of assertion leads to representations that are similar to the types of LFs that Guéron (1980) proposed for "presentational" sentences in English. Guéron (1980) claimed that in presentational sentences, the verb "scopes over" its arguments; Guéron, Babby, and Partee & Borschev can all be seen as getting at the same insight regarding presentational sentences. Partee and Borschev (2004) present Babby's (1980) rule for Gen-Neg, and then they give what they call an "approximate contemporary translation" of this rule, as follows:

> If the subject does not escape from the VP via topicalization, and the verb can be an 'existential verb' ["semantically empty," in Babby's terms], then negation licenses Genitive marking of the subject and Existential Closure (Diesing, 1992) applies.　　Partee and Borschev (2004: 214)

In both of the unaccusative structures that I have proposed, the verb c-commands the internal argument. But only in the case of the complex complement (SC) structure does the verb asymmetrically c-command the argument, a small clause subject. As discussed further in Chapters 3 and 4, I analyze *arrive*-type sentences as existential sentences; the predication provided by the SC is a key element in providing a domain for existential closure that allows for the "presentation" (to use Guéron's terms) of new discourse referents.

My analysis also draws on some further insights from Partee and Borschev (2004). Building on their update of Babby, they argue that "existence is always relative to a 'LOCation', which may be implicit" (214). For Partee and Borschev (2004), a locative element is semantically obligatory in existential sentences. I will argue that this obligatory LOC is part of the syntax and semantics of both existential and complex complement (*arrive*-type) sentences, which on my analysis are a type of existential sentence. As I discuss further below, Francez (2007) provides a more formal argument for the role of a locative-like element in existential sentences.

In addition, I will argue that the notion of domains of existential interpretation can be sharpened by viewing indefinites (which are usually, but not always, discourse-new) as introducing a set of alternatives into the interpretation of the sentence. This approach to indefinites draws on work in "alternative semantics" in the sense of Kratzer and Shimoyama (2002). In this framework, the alternatives introduced into the computation of a sentence can, but do not have to be, existentially closed. The latter possibility departs from Kratzer and Shimoyama (2002) and integrates the idea from the framework called "inquisitive semantics," which is that alternatives can percolate through a computation; in this approach, an alternative set

that is not existentially closed can be part of the meaning of a sentence (AnderBois, 2010). I will argue that evidence from the syntax-information structure interface shows that the conditions allowing existential closure—viewed in the sense of closing off the alternative set—obtain at only certain points in the derivation, as proposed by Mascarenhas (2011).

2.2.4 Summary

This chapter started off by defining unaccusativity in the terms of contemporary generative syntax. The term *unaccusative* describes a type of sentence with two syntactic features: (1) no external argument, and (2) a VP-internal argument requiring structural case. The second part of this definition picks out direct objects, which we have seen includes both "standard" direct objects and Small Clause subjects. I then discussed two well-known unaccusativity diagnostics for two languages: *ne*-cliticization in Italian, and Gen-Neg in Russian. I showed how these diagnostics conform to our definition of unaccusativity, how they cut across different semantic classes of verbs, including change-of-state verbs like *break*, motion roots like *arrive*, and existential/locative *be*.

I emphasized in this chapter that the definition of unaccusativity must be kept separate from the notion of what was called in RG "unaccusative advancement"—the promotion of direct object to subjecthood, which in the current framework we think of in terms of movement. I focused on *ne*-cliticization and Gen-Neg because these diagnostics are *surface* unaccusativity tests. A surface unaccusativity test reveals the VP-internal status of the single argument in an intransitive sentence at "surface structure"; in other words, the argument has not moved from a VP-internal position.

For *ne*-cliticization, the argument must be VP-internal and c-commanded by the clitic *ne*.

The Russian Gen-Neg can be considered a surface unaccusativity test, but it also shows the limitations of the notion of deep vs. surface unaccusativity. The genitive argument in an intransitive Gen Neg sentence does not have to remain VP-internal. This is because the argument can move, for discourse reasons, out of the VP. In this way, the argument in a Gen Neg sentence may not be VP-internal at "surface structure." But as Harves (2002) shows, this argument receives its (genitive) case VP-internally. This fact requires that we must be a little cautious in referring to unaccusativity diagnostics as "deep" or "surface," since information structural phenomena can make this distinction unclear. Indeed, the movement of Gen Neg DPs out of the VP led to Babby's mistaken claim that Gen Neg was not a test for unaccusativity, as Harves (2002) points out. If we take a more nuanced view of deep vs. surface unaccusativity, we can say that Gen Neg is still a surface unaccusativity test in that the single argument gets its case VP-internally, but that the derivation might involve subsequent discourse-related movement.

2.3   Unaccusativity diagnostics in English

We turn now to a brief overview of the unaccusativity diagnostics that have been proposed for English. We will see that unlike Italian and Russian, English does not have an unaccusativity test that cuts across all semantic classes of verbs—or rather, verbal roots, in the current framework. The difficulties of diagnosing unaccusativity in English have even led some to claim that unaccusativity does not exist in English (see e.g., Wechsler, 1997). We must keep in mind that to say English lacks unac-

cusativity is to claim that English does not have sentences that satisfy both parts of the definition of an unaccusative sentence: (1) no external argument, and (2) a VP-internal argument requiring structural case. When we consider English intransitive sentences from the perspective of this definition, we can see that English does have unaccusative structures.

One phenomenon that has presented a challenge to diagnosing unaccusativity in English is the variable behavior of semantic classes of verbal roots with respect to English unaccusativity diagnostics. As I discuss below, this varying behavior is not surprising in light of the two unaccusative structures that I propose. Furthermore, I will show that we must look to the interfaces with syntax in order to see additional evidence for unaccusativity in English: evidence from the syntax-prosody interface constitutes a deep unaccusativity test that cuts across semantic classes of roots, and evidence from the syntax-information structure interface constitutes another deep unaccusativity test, though one that picks out just one type of unaccusative structure.

The three standard unaccusativity diagnostics in English are the causative-inchoative alternation, the resultative construction, and *there*-insertion. The following overview of the unaccusativity diagnostics in English will serve as the basis for the discussion of these diagnostics with respect to the two unaccusative structures that I propose in Chapter 3.

2.3.1   The causative/inchoative alternation

The "causative/inchoative alternation" refers to the fact that some verbal roots can occur in both transitive (causative) and intransitive (inchoative) sentences. The causative sentence has the interpretation that the external argument is the causer or initiator of

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the event denoted by the predicate, and the intransitive sentence has an inchoative interpretation, one that can be paraphrased as "to become X" or "to come to X", where X is a state denoted by the verbal root.

The direct object of the transitive alternant is the subject of the intransitive sentence, as shown in (60) and (61) with the verbs *break* and *burn*, and with the themes underlined.

(60)   a.   Jamie broke <u>a candle</u>.   *causative*

         b.   <u>A candle</u> broke.   *inchoative*

(61)   a.   The hippies burned <u>some incense</u>.   *causative*

         b.   <u>Some incense</u> burned.   *inchoative*

Why has this alternation been considered a diagnostic for unaccusativity? One reason simply has to do with the notion of locality of theta role assignment—that theta roles are assigned to DPs in specific structural configurations. For example, if we assume that *a bottle* in (60a) is interpreted as a theme because of its structural position, then we can maintain this generalization if we say that *a bottle* in (60b), which is also interpreted as a theme, is generated in the same structural position. The main difference between (60a) and (60b) then boils down to the movement of the internal argument to subject position in the intransitive version. This makes the causative/inchoative alternation a deep unaccusativity diagnostic.

The causative/inchoative alternation in English has received a great deal of attention in the literature, in part because it is tempting to analyze pairs of sentences like these by assuming that one alternant is primary, and the other derived is from the first. For example, Levin and Rappaport Hovav (1995) argue that the lexical entry

for a verb like *break* involves both an internal and an external argument. In their system, an intransitive sentence like (60b) is generated by an operation in the lexicon that alters the argument structure of *break* such that the external argument slot is not projected. But as Schäfer (2008) has shown, there are many problems that result from deriving one alternant from the other.

The causative/inchoative alternation occurs with change-of-state verbs. Verbal roots that denote existence or appearance cannot appear this alteration, as shown in (62)–(63).

(62)　　a.　A group of hippies arrived.

　　　　b.　*A colorful bus arrived a group of hippies.

(63)　　a.　Some problems arose at the potluck.

　　　　b.　*Don't arise any problems at the potluck. (from Hale and Keyser, 1986: 30)

We will see that the types of roots that occur in the causative/inchoative alternation also tend to occur in resultative constructions (§2.3.2). I will argue in Chapter 3 that this is because these roots occur in the same syntactic configuration, the "simple complement structure." Verbal roots like those in sentences (62)–(63) do not occur in causative/inchoative alternations or in resultative constructions because the syntactic configuration in which they occur, the SC or "complex complement structure" does not allow it.

2.3.2 The resultative construction

The resultative construction has been the subject of much discussion in the literature, particularly following Levin and Rappaport Hovav (1995), who dedicate a whole chapter to this construction. As an unaccusativity diagnostic, it follows the logic of all unaccusativity diagnostics: a syntactic property that holds for transitive direct objects holds for the arguments of some intransitive sentences. In transitive sentences, resultatives can be formed from VP-internal arguments (direct objects) only; resultatives cannot occur with external arguments or with VP-internal oblique arguments. When a resultative is acceptable in an intransitive sentence in English, we conclude that the single argument in the sentence is underlyingly a direct object. The resultative construction is therefore a deep unaccusativity test.

The canonical resultative construction involves a transitive sentence with a direct object DP followed by a single XP. The diagram below shows the terminology that I will use in this discussion of resultatives. This terminology is inspired by (though not precisely the same as) Beavers's discussion of resultatives (to appear).

Dawn	*pounded*	*the dough*	*flat*
	VERB	DIRECT OBJECT DP	RESULT XP

Table 2.2: Resultative terminology with example sentence

The terminology in Table 2.2 raises two questions that have been the subject of some discussion in the literature. The first question is whether the "direct object DP" in a resultative sentence really is a direct object. One reason why this question has arisen is because some work has analyzed the direct object DP as the subject of a Small Clause; according to these analyses, a SC subject was not seen as a proper

direct object. But we now know from our definition that there are at least two ways to be a direct object, and being a small clause subject is one of them—though this does not decide whether the SC analysis of resultatives is the right one. The second question is whether the direct object DP and the result XP form a constituent. This latter question has been the subject of much discussion in the literature; I will argue further along that they do not form a constituent, but that claim will not play a role in my overview of the resultative construction here.

Resultative sentences have a particular interpretation, one in which there are two events and a causing relationship between those two events. Using the sentence from Table 2.2 as an example, the two main events are given as paraphrases in (64a)–(64b). One of the interesting properties of resultatives is the causing relationship between the two events, that of (64a) causing (64b), for example. As Beavers (to appear: 1) points out, there is little disagreement that resultatives have a "bieventive" structure or interpretation, but proposals have varied widely as to how to derive this interpretation.

(64)   *Dawn pounded the dough flat.*

    a.   Event 1 (an activity): Dawn pounded some dough.

    b.   Event 2 (a stative event): The dough became flat.

    c.   (Derived, causing event): the pounding of the dough caused the dough to become flat

The interpretation of a resultative sentence is such that result XP (*flat*) does not modify the direct object DP in a straightforward way; rather, the result XP modifies the end state of the direct object DP. One way to see this is to observe that the two sen-

tences in (65) do not have the same interpretation. This is because they do not have the same event structure.

(65)   Result vs. no result

   a.   Dawn pounded the dough flat.   (2 events)

   b.   Dawn pounded the flat dough.   (1 event)

The example in (65a) involves a resultative with a transitive sentence, where the result XP modifies the end state of the internal argument. It is important to note, for the logic of the resultative as an unaccusativity diagnostic, that a resultative cannot modify the end state of an *external* argument. For example, we can try to modify the external argument in (64) with an adjective that pertains mainly to humans, as shown below in (66), but the sentence does not have a resultative interpretation.

(66)   Dawn pounded the dough sweaty.

Although the sentence is an acceptable one, the adjective *sweaty* does not describe the state of the dough as a result of Dawn's pounding activity. *Sweaty* here can only be interpreted in what is called a depictive sense: Dawn was sweaty while she was doing the pounding.[19] The generalization that resultatives can only occur with direct objects led Levin and Rappaport Hovav (1995: 34) to refer to the "Direct Object Restriction" (DOR) on resultatives. Recall that this property of resultatives in English is similar to *ne*-cliticization in Italian, where *ne* extraction can only be done from direct objects.

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[19]The resultative/depictive distinction and terminology goes back to Halliday (1967a: 62–66), as noted by Beavers (to appear: 2).

2.3.2.1 Resultatives in intransitive sentences

The resultative construction is acceptable in some intransitive sentences but not in others, as shown in (67). Following the logic of unaccusativity diagnostics, we can conclude that the sentences with acceptable resultatives are unaccusative—their single argument is a direct object. When testing sentences for resultatives, it is important that the sentence have a resultative, and not a depictive, interpretation; it is not enough for there to be a post-verbal adjective. For example, although (67a) is an acceptable sentence, it does not have a resultative interpretation, where Jamie became sweaty as a result of a dancing activity. The only available interpretation of (67a) is a depictive interpretation, that Jamie was sweaty while he was dancing. In (67b), on the other hand, we can say that the bottle became open as a result of having broken.

(67)   a.   Jamie danced <u>sweaty</u>.   *resultative interpretation*

      b.   A bottle broke <u>open</u>.   ✓ *resultative interpretation*

If resultatives are possible only with direct objects, then pairs of sentences like (67) lead us to conclude that the single argument in some intransitive sentences is a direct object. This argument follows the logic of the other unaccusativity diagnostics we have seen. This analysis unifies resultative constructions as requiring a structural direct object, as summarized in (68), where the result XP is in italics.

(68)   a.   Dawn pounded the dough <u>flat</u>.   ✓ *resultative: direct object*

      b.   A bottle broke <u>open</u>.   ✓ *resultative: direct object*

      c.   Jamie danced <u>sweaty</u>.   *resultative: not a direct object*

The resultative construction is a deep unaccusativity test: in an intransitive sentence, the intransitive direct object is not VP-internal at "surface structure." When an intransitive sentence is acceptable with a resultative, we must infer that the single argument in that sentence was once in a VP-internal position and argue that the fact that it was in this position licences the result XP. With the exception of expletive sentences (to be discussed below), the direct object in English cannot stay in situ; if it could, we would expect a sentence like (69a) to be acceptable.

(69) a. *Froze the carrot juice *solid*.

      b. The carrot juice froze *solid*.

The patterns in (68) and the logic described above make the resultative construction a persuasive diagnostic for deep unaccusativity in English. But unlike *ne*-cliticization in Italian, which can occur across all types of unaccusative roots and transitive direct objects, the resultative construction is limited in that it only occurs with change-of-state roots like *break* and *freeze*. We cannot form resultatives with verbs of existence and inherently directed motion (e.g., *appear*, *arrive*), as shown in (70).

(70) a. The paisley dress appeared *large*.   (*not resultative*)

      b. The sunflowers arrived *late*.   (*not resultative*)

In example (70a), the paisley dress is not large as a result of having "appeared," and in (70b), the flowers are not late as a result of having "arrived." In Chapter 3 I will argue that the structures in the sentences in (70) are unaccusative—the single argument is a direct object. But I argue that the structure that roots like *appear* and *arrive* occur in does not allow resultatives.

The fact that the resultative does not cut across all semantic classes of verbal roots has led to claims that it is not an unaccusativity diagnostic (Rappaport Hovav and Levin, 2001; Wechsler, 1997). In the following subsection, we will take a short detour from the overview of English unaccusativity diagnostics to explain how some of these disputes have come about.

2.3.2.2 Types of resultatives

Many different types of constructions in English have been called resultative, but not all these constructions have the same distribution. If they do not have the same distribution, then we do not expect them all to have the same analysis. As Kratzer (2005: 179) points out, lumping together all constructions that are termed "resultative" can obscure the generalizations necessary for an analysis (see also Iwata 2006). Table 2.3 and Table 2.4 give an overview of the types of constructions that have been called resultatives. Table 2.3 shows resultatives with what have been called "selected" objects. This terminology comes from a view of argument structure in which transitive verbs are specified in the lexicon as selecting for direct objects. Simply put, a resultative sentence with a "selected object" is a sentence that is acceptable either with or without the result XP. Wechsler (1997) calls these "control" resultatives, but since this terminology is less transparent, I will use the older terminology here and throughout.

A resultative sentence with an "unselected" object is a sentence which is (generally) not acceptable without a result XP.[20] The most productive examples in this class are in the "reflexive plus result" construction, illustrated with the first sentence

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[20]Wechsler (1997) calls these "ECM" resultatives.

Result XP	Resultative	Example without result XP
AdjP	Dawn pounded the dough flat	Dawn pounded the dough
	Devyn painted the barn red	Devyn painted the barn
PP	Dawn pounded the dough into a pancake	Dawn pounded the dough
	Dawn pounded the dough into the pan	
Particle	The hippies ate the brownies up	The hippies ate the brownies
	The hippies ate up the brownies	
DP	Devyn painted the barn *(fiery) red	Devyn painted the barn

Table 2.3: Resultatives with "selected" direct objects

in Table 2.4, and the related construction, the "X's way" type (acceptable only when the result XP is a PP), illustrated in the third sentence in Table 2.4.

Result XP	Resultative	Example without result XP
AdjP	Jamie danced himself sweaty	*Jamie danced himself
	Devyn shouted himself hoarse	*Devyn shouted himself
PP	The hippies giggled their way through the movie	*The hippies giggled their way
	Dawn beaded herself into Devyn's heart	*Dawn beaded herself
Particle	Devyn butched himself up	✓Devyn butched up
	Devyn butched up his outfit/*himself	
DP	The disco made Jamie a man	*The disco made Jamie

Table 2.4: Resultatives with "unselected" direct objects

These tables show that the class of resultatives is heterogenous. One way in which we see different distributions among these sentences is in the word order possibilities that the sentences with particles have and that the other sentences lack. Another difference is in productivity. Specifically, some of the constructions above are very limited with respect to the semantic class of acceptable adjectival result XPs. My intuition is that the selected object types in Table 2.3 are less frequent and are

very limited in types of acceptable result XPs (though this observation should be backed up by a corpus study.) The limitation of adjectival result XPs with selected objects is shown in (71)–(72).

(71)   a.   Dawn watered the seedlings *flat*.

      b. ??Dawn watered the seedlings *perky*.

(72)   a.   Devyn pounded the metal *flat*.

      b. ??Devyn pounded the metal *bumpy*.

Seedlings can be described as perky, and it is easy to imagine their perkiness being the result of a watering event. Similarly, metal can be described as bumpy, and bumpy as a result of a pounding event. Nevertheless, *perky* and *bumpy* are still infelicitous result XPs.

      Interestingly, the group that appears to have the most flexibility is the unselected object type (Table 2.4). The X's way and the "reflexive plus result" constructions are very flexible in the semantic type of the adjectival result XP that they allow. In addition, it could be argued we should set apart all resultative constructions that involve a result XP that is a PP. This is because these sentences have an overt functional head (the preposition) that the other types of resultatives lack. The preposition and its complement bring about the relationship between the activity denoted by the verb and what follows. But even within PP result XP types, we see subtle but crucial interpretive differences. In (73), for example, sentence (73a) has the interpretation that the dough gets transformed into a pancake (or into the shape of a pancake), whereas in (73b), the dough changes locations.

(73)   a.   Dawn pounded the dough *into a pancake*.   (shape)

            b.   Dawn pounded the dough *into the pan*.   (direction)

The differences described above suggest that although all these types of sentences might be loosely termed "resultative," it is not likely that they have the same syntactic analysis.

2.3.2.3   Restricting the enterprise

For reasons like the ones described above—the differences in distribution, productivity, and interpretation—Kratzer (2005) suggests that the best way to get a satisfying account of resultatives is to restrict our attention to smaller subsets of types of resultatives. Doing so will allow us to capture the distributional generalizations that must be accounted for. Kratzer (2005: 178) suggests in particular that we separate off resultatives with adjectival result XPs from resultatives with directional result XPs (either PPs or particles). The analysis in Kratzer (2005) is restricted just to sentences with activity verbs used intransitively and with adjectival result XPs, as illustrated in (74).

(74)   We drank the teapot *dry*.

In (74), the activity of the verb is interpreted as directly causing the change of state of the "unselected" direct object, and the change is described by the result XP. When we return in Chapter 3 to the resultative construction with respect to the structures I have proposed, I will therefore restrict my discussion to just those resultative sentences that have an adjectival result XP. I will also have more to say about the relevance

of Kratzer's analysis of resultatives with respect to resultative sentences with unaccusative VPs.

2.3.3 *There*-insertion

Levin and Rappaport Hovav (1995) call *there*-insertion the only surface unaccusativity diagnostic that English has. Recall that for a sentence to pass a surface unaccusativity test, the single argument in the sentence must be shown to be VP-internal at both deep structure and surface structure. For the other unaccusativity diagnostics in English that we have looked at—the resultative construction and the causative/inchoative alternation—the single argument in the sentence is preverbal, and it appears to be in the same position as an external argument. For these diagnostics, we had to find tests that reveal the object-like properties of the argument in order to show that it was merged VP-internally. In the case of *there*-insertion, however, we see the argument postverbally, as shown in (75a). Although *there* sentences have a host of properties that make their analysis challenging, no analysis casts doubt on the idea that the DP in a *there*-insertion sentence is VP-internal, though analyses may differ as to the exact syntactic representation, as well as the nature of the "expletive" *there* in these sentences.

(75)   *there*-insertion alternation

      a.   There arrived a group of hippies.

      b.   A group of hippies arrived.

Because sentences like the ones in (75) can be seen as alternating between a *there*-insertion variant and a non-*there*-insertion variant, we might refer to this diagnostic as the *there*-insertion alternation, just as we refer to the causative/inchoative alternation.

As mentioned above, *there*-insertion alternation is generally not possible in English with change-of-state roots like *break* and *freeze*, as we see in (76)–(77).

(76) a. A candle broke.

b. *There broke a candle.

(77) a. The carrot juice froze.

b. *There froze some carrot juice.

There-insertion as a diagnostic can be seen as dividing unaccusatives into two groups: those that allow resultatives and the causative/inchoative alternation, and those that allow *there*-insertion. As I argue below, the syntactic configuration that allows *there*-insertion is one that change of state roots do not generally occur in. The representation I propose for structures that allow *there*-insertion involves the verb taking a small clause complement. As we have seen, small clause subjects are direct objects: they are VP-internal and they require structural case. The structure I propose is essentially that of a locative existential copular sentence, along the lines of Moro (1997). This aspect of my analysis brings together certain types of *be* sentences in English with *there*-insertion unaccusatives. This is a welcome result, since for some speakers, *there*-insertion is acceptable only with *be* (see Kayne, 2010a).

One complication for *there*-insertion as an unaccusativity diagnostic is the fact that *there*-insertion is sometimes possible with verbs that are usually analyzed as unergative, not unaccusative. Levin (1993) points out that this is the case with

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manner of motion verbs such as *climb, crawl, hobble, hop, stride, walk*, when the sentence also includes some specification of direction of motion (Levin, 1993: 89). The data and judgments below are from Levin (1993: 89–91).

(78)   Direction of motion specified   (Levin, 1993: 89)

        a.   A little boy darted into the room.

        b.   There darted into the room a little boy.

(79)   Location specified, but direction of motion *not* specified   (Levin, 1993: 89–90)

        a.   A little boy ran in the yard.

        b.   ?There ran in the yard a little boy.

The hypothesis that I am pursuing here is that unaccusativity and unergativity refer to syntactic configurations that verbal roots occur in; they are not properties of individual verbs. Seeing unaccusativity and unergativity as properties of verbs themselves can make sentences like those in (78) confusing, because the data appear to undermine *there*-insertion as an unaccusativity diagnostic. From the perspective that *dart* is unergative, then the data in (78) force us to say either that *there*-insertion is not an unaccusativity test (because some unergative verbs pass it), or that *dart* is both unaccusative and unergative. On the other hand, if we take the perspective that I pursue here, the question becomes the following: why it is that *dart* can occur in a structure where the single argument in the sentence is sometimes an internal argument, and sometimes an external argument? In the following chapters, I will show

that this behavior is expected once we look more carefully at the syntax, semantics, and information structural properties of *there*-insertion sentences.

2.3.4 Summary

In this section we have looked briefly at three unaccusativity diagnostics in English: the causative/inchoative alternation, the resultative construction, and *there*-insertion. We have seen that these diagnostics are not simple to apply, since each gives evidence for the VP-internal status of arguments in a different way. Furthermore, these diagnostics divide up the set of unaccusative verbs into broad semantic classes. Change of state roots like *break, freeze* and *open* allow resultatives and can undergo the causative/inchoative alternation, but they do not allow *there*-insertion. Roots that allow *there*-insertion include *be* and other verbs of existence and appearance such as *arrive* and *appear*, as well as verbs of motion such as *come (in)*. The latter class cannot host adjectival resultatives and do not undergo the causative/inchoative alternation. Furthermore, we have seen that certain unergative roots can occur in what look like unaccusative structures: verbs of movement in sentences when a directional element is present. I will argue that this behavior is expected when we view unaccusativity as a property of syntactic structures rather than a property or attribute that verbs or verbal roots possess.

The two broad semantic classes that the English unaccusativity diagnostics pick out involve change of state on the one hand, and existence/appearance/inherently-directed motion on the other. The analysis presented in the next chapter proposes that roots of each type occur in different syntactic configurations. I will argue that both of these configurations are unaccusative according to our working definition

of unaccusativity—the single argument in the sentence is merged VP-internally and requires structural case. We will also see that some roots, like *appear* may be considered a subtype of the existence/appearance class, and this subtype has properties of both classes.

Unaccusative Structures

3.0   Two unaccusative structures

This chapter presents two unaccusative structures, one that change of state roots such as *break* occur in, and one that roots of appearance and inherently directed motion such as *arrive* occur in. In earlier approaches to argument structure and phrase structure, it was not easy to conceive of two different types of unaccusative structures, despite the fact that work on unaccusativity from Hale and Keyser (1986) to Levin and Rappaport Hovav (1995) converged on the idea that there was likely more than one way for a structure to be unaccusative. As Levin and Rappaport Hovav (1995: 81) put it, "there is no reason to believe that all unaccusative verbs have the same adicity and argument structure." The analysis presented here builds on approaches such as Ramchand (2008) and Schäfer (2008), work that decomposes event structure in the syntax and makes use of the idea that there can be more than one

thematic direct object position. I have stressed the importance of this idea of two direct object positions and argued that it was implicit both in Moro (1997) and more broadly in generative syntax from early on. In addition to the two basic unaccusative structures I propose, we will see that roots like *appear*, which in many ways pattern with the *arrive* class, reveal a third unaccusative structure, a subtype of the *arrive* structure. The existence of this structure is predicted by the approach taken here, one that focuses on available structural configurations rather than on classes of "verbs."

The analyses I propose also explain some interesting properties of unaccusative sentences at the interfaces with prosody and information structure. These interface effects reveal that there are mismatches in the syntactic domains relevant to prosody as compared to those relevant to information structure. The following paragraphs provide an introduction to the analysis, followed by a more careful examination of each structure with respect to the English unaccusativity diagnostics discussed in Chapter 2.

The trees in (80) provide an overview of my analysis of unaccusative structures with change-of-state, *break*-type roots (A), and unaccusative structures with motion/existence (*arrive*-type) roots. I refer to the structure in (80)A as the "simple complement" structure, since here we have a DP complement of *v*; I refer to (80)B as the "complex complement" structure, since in this structure, the complement to *v* is in a lower domain, the subject of a predication that I label a small clause (SC). As noted above, the analysis here abstracts away from any potential differences between SC and PredP structures.

(80)   Two unaccusative vPs: Overview of the analysis

  A.   Simple complement structure   B.   Complex complement structure

```
        vP                              vP
       /  \                            /  \
      v    DP                         v    SC
                                          /  \
                                        DP    DP
                                             /  \
                                          PLACE_here
```
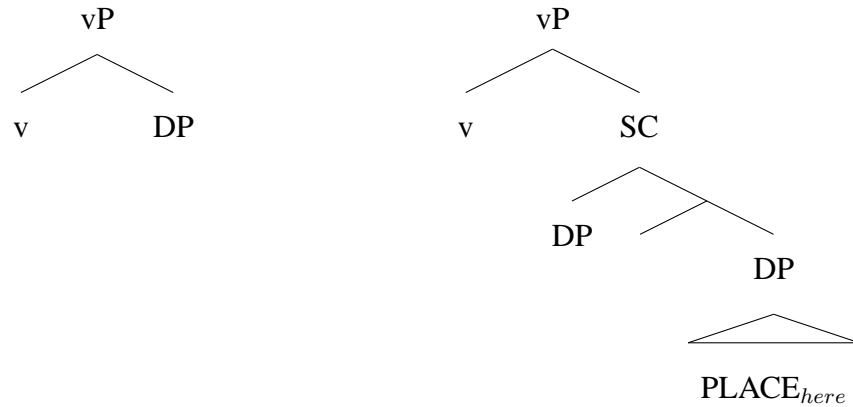
       The trees in (81) provide a more detailed picture of my analysis. Both trees have precursors in the previous literature, but as I discuss below, they have not to my knowledge been brought together in this way as being the two types of unaccusativity which, for example, explain so-called English unaccusative "mismatches."

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(81)   Detailed structures: The simple and the complex complement structure

A.   *A vase broke.*   B.   *Some hippies arrived.*
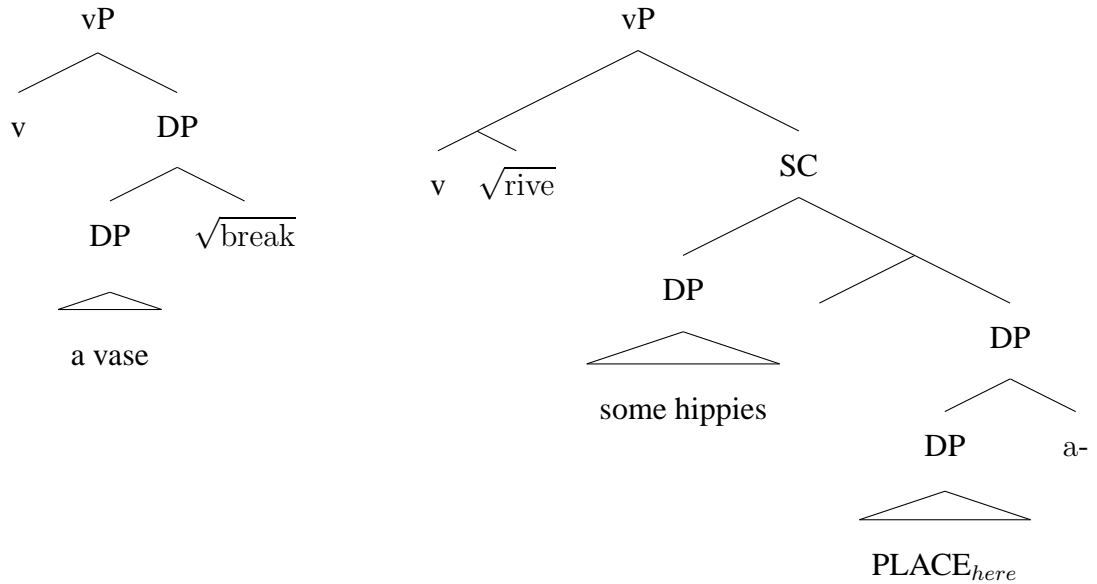
The node labeled vP in (80) and (81) can be loosely thought of as the "VP" of other systems, but some further explanation is necessary. In particular, the role of little-*v* must be clarified, since the little-*v* in the system I am adopting is somewhat different from that of Chomsky (1993) and following. In the system I adopt here, *v* has two jobs: on the syntactic side, it serves to categorize an uncategorized root (Halle and Marantz, 1993); on the semantic side, it introduces an event variable. In a Chomskyan system, on the other hand, external arguments are merged to spec,vP; in this system, *v* (strictly speaking *v**) is a phase head (Chomsky, 1993, 2001, 2005).

In the current system, based on that of Kratzer (1994, 1996), *voice* is the functional equivalent to Chomskyan *v**. The head that introduces the external argument is

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therefore *voice* rather than *v**. I will indicate the spellout-triggering version of *voice* as *voice**, by analogy with *v**; the notational addition of the asterisk to the voice head is my own. For comparison, the two systems are shown in (82), where EXT ARG indicates the specifier position that external arguments are merged to.

(82) "Chomskyan" and "Kratzerian" systems
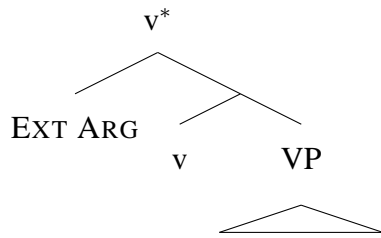
 A. Chomskyan system   B. Kratzerian system
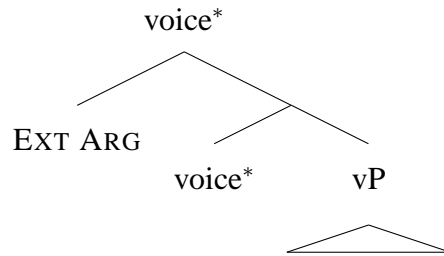
In my analysis, I adopt the Kratzerian system. The relevant phase head in the Kratzerian system is *voice*, *voice**when it triggers spellout. For clarity, I will sometimes refer to this projection as 'voice*P/v*P' in order to emphasize that my observations should hold for both *v* and *voice*-based systems. Although there are important differences between the two systems, those differences do not play a large role in the insights that I will claim that the analyses in (81) provide.

The analyses in (81) follow Marantz (2009a,b) in the merge position of the roots. Marantz argues that the distribution of roots differs from that of XPs: roots do not project full XPs—in fact, they do not *project* at all. Marantz argues that roots are syntactically adjuncts, and semantically modifiers. The labeling in these trees reflects this. The complement of *v* in the simple complement structure (81)A is labeled a DP,

since the root is shown as adjoined to the direct object DP. Although I refer to the labels for phrasal projections here, we should keep in mind that labels are simply shorthand for collections of features formed as the result of Merge (for discussion, see Collins, 2002).

3.1 Change of state unaccusativity

Versions of the simple complement structure (81)A have been proposed for change of state verbs in various forms by Alexiadou et al. (2006a,b), Schäfer (2008) and Marantz (2005, 2009a). This structure also has an early precursor in Kural (2002). The tree in (81)A is repeated below as (83).

(83)   The simple complement structure: Change of state unaccusativity
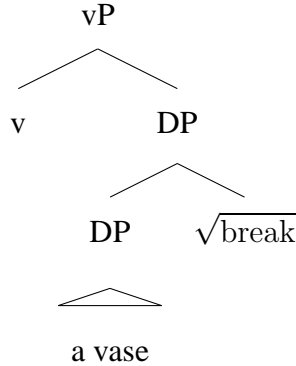
The current analysis and the analyses referred to above take the view that structural relationships within the vP have specific semantic interpretations. This family of approaches has been associated with the program of Hale and Keyser (e.g., Hale and Keyser, 1986, 1991), but the spirit of this approach has been given its fullest exposition by Ramchand (2008) and Schäfer (2008). On the view I take here,

a change of state interpretation comes about when a stative event is the sister of an eventive little-*v*; this configuration is interpreted as a caused change of state (Marantz, 2009a: 3).

In light of this perspective, what may be the effect of the different merge positions of the roots in these two structures? One consequence may be interpretive. Marantz (2009a) argues that the merge position of the root in the simple complement structure specifies the end state of the change of state. For example, in (83), the end state can be paraphrased as 'broken'. Another possible consequence concerns the availability of different types of *voice* heads that can select for the vP. On this line of analysis, it matters whether *v* is modified (as it is in the complex complement structure) or whether it is not modified (as in the simple complement structure), such that the modification of *v* adds some semantic content to vP that restricts the possibilities for types of *voice* that can be merged further up the tree.

Although deriving the possibilities for *voice* based on the merge position of the root within the vP is worthy of further exploration, I will pursue an analysis of the relationship between vP and *voice* that goes in a somewhat different direction. Specifically, I will argue that the relationship between *v* and the direct object is what determines the possibilities in the derivation further up.

3.1.1 Voice, agreement, and derivational domains

Let us start with the standard—perhaps foundational—assumption that DPs in a syntactic structure need to be *licensed* in some way. In other words, there must be something that makes the occurrence of a DP in a particular syntactic position licit. I will implement licensing in terms of an agreement relationship. Let us say, then, that *v*

can either agree or not agree with the direct object. If *v* does not agree with the direct object, something else in the derivation must license that DP, or the derivation will crash. In the derivation of a sentence with intransitive *break*, for example, the *v* in does not enter into an agreement relation with the direct object. This is illustrated in (84). Further along, we will consider what happens if *v* agrees with the direct object.

(84)   vP for *A vase broke*
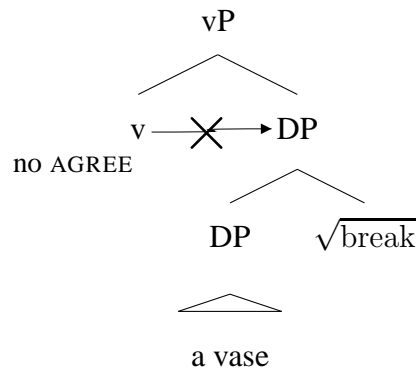
At this point in the derivation, *voice* is merged next. But the version of *voice* that is merged is one that selects for a non-agreeing vP, and this version of *voice* does not send its complement domain to the interfaces. This is because the material that would be sent to spellout is not ready: it has an unlicensed element in it.

Recall that in current generative grammar, a completed cycle of syntactic operations is called a phase (Chomsky, 2000, 2001, 2008). On a phase-based approach to syntax, syntactic objects are sent to the interfaces at certain points during the course of a derivation. It is commonly assumed that that one of those points is at the voiceP/v*P level. In the case of a non-agreeing *v*, I propose that the type of voice that is merged does not trigger spellout. The idea that unaccusative structures involve

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a phase head that is not really a phase head—that does not trigger spellout—was first proposed in Chomsky (2000) and has played a role in many accounts of unaccusative phenomena (see e.g., Harves, 2002). My analysis encodes this proposal as well. As I have noted above, Chomsky uses the notation v^* to indicate the version of v that triggers spellout; I use the notation *voice**. In order to be even more explicit about the phasal properties of these heads, I will add some notation to indicate the version of *voice* that does not trigger spellout: *voice*$^-$.

Continuing with the derivation of (84), then, when v does not agree with the direct object, let us say that this vP is, in English, selected for by voice$^-$.[1] In the current derivation, if voice* were merged at this point, spellout would be triggered and (following standard assumptions), the complement of voice* would be sent to spellout. This would result in an unlicensed DP at the interfaces, and the derivation would crash. But if voice$^-$ is merged, the cycle of syntactic operations can continue, and the DP gets another shot at being licensed. The voice$^-$P for our sentence is shown in (85).

---

[1] Further along, I will suggest that a non-agreeing v and voice* may occur with unergative sentences in English (i.e., sentences with no visible direct object) and possibly with some types of impersonal sentences that we see in Germanic and Icelandic.

(85)   voice⁻P for *A vase broke.*

$$voice^-P$$

voice⁻   vP

no AGREE   v —✕—→ DP

DP $\sqrt{\text{break}}$
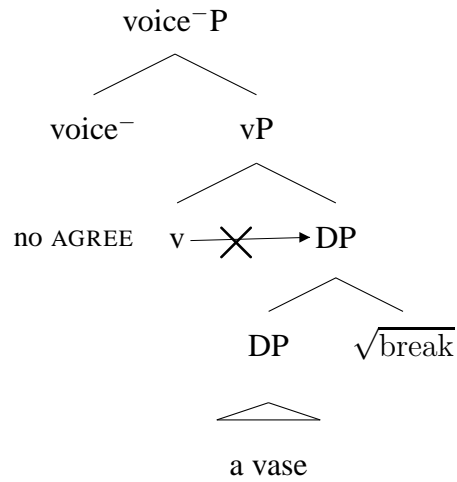
a vase

I propose that when T^0 is merged (or when C^0 is merged and transfers its features to T^0, on a feature-inheritance approach), T^0 then licenses (agrees with) the direct object. This is shown in (86).

(86)   TP for *A vase broke.*

TP

T   voice⁻P

AGREE

voice⁻   vP

v   DP

DP $\sqrt{\text{break}}$

a vase
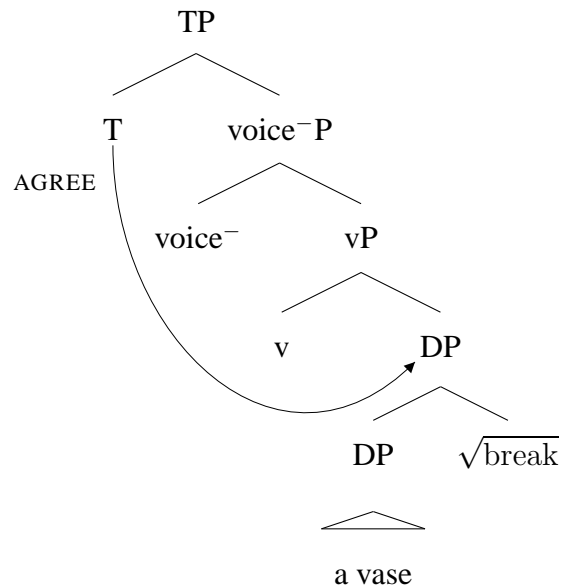
Following standard assumptions, T^0 has an EPP feature, so its specifier must be filled. Now that the direct object is licensed, the direct object can satisfy that feature and undergo movement to spec,TP, as shown in (87).

(87)   EPP-driven movement in *A vase broke.*
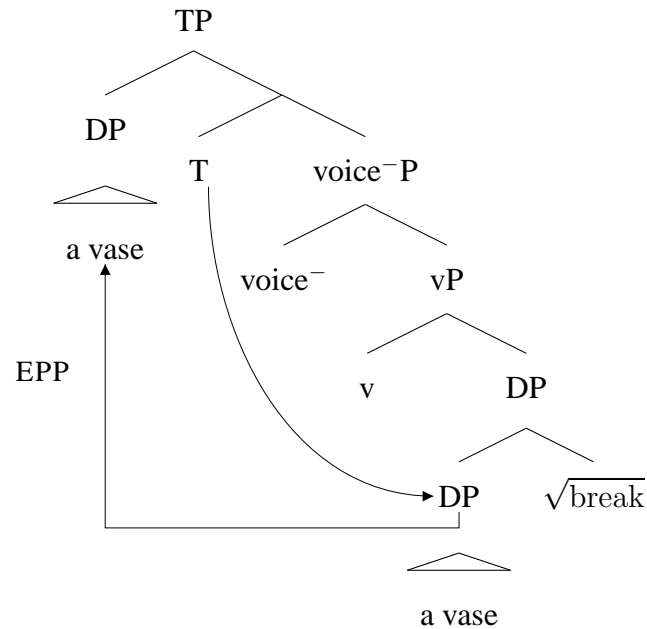
In (87), the verbal root is not shown as raising to adjoin to *v* and then to voice$^-$, though I assume that these movements occur. At this point these movements are not crucial to the derivation, but we will return to issues involving the verb in relation to *voice* and spellout domains in Chapter 5.

What if the derivation in (84) proceeded differently, and *v* agreed with the internal argument? The tree in (88) shows the beginning of this derivation.

(88)   *v* agrees with internal argument

$$
\begin{array}{c}
\text{vP} \\
\diagup \diagdown \\
\text{v} \quad\quad \text{DP} \\
\checkmark\text{AGREE} \\
\text{DP} \quad \sqrt{\text{break}} \\
\diagup\diagdown \\
\text{a vase}
\end{array}
$$
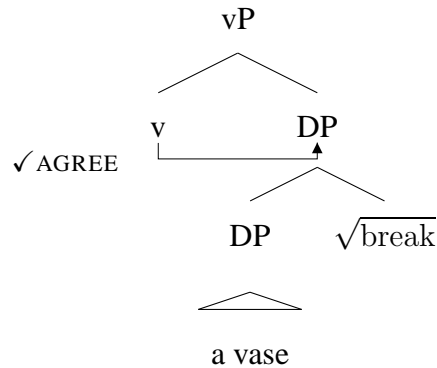
Here *v* agrees with the direct object, and we now have a licensed internal argument. At this point, the vP can be sent to spellout. I propose that whenever we have an agreeing vP, the next relevant head to be merged is *voice**; in other words, I stipulate that *voice*$^{-}$ cannot select for an agreeing vP. The merger of strong voice will allow the material in its complement domain to be sent to the interfaces once its features have been satisfied.

One property that has been proposed of phase heads is that they require a filled specifier. Although this property is not a necessary one (see e.g., Kučerová 2012a,b), I will assume that it is so. But I will add that *voice** comes in two varieties, one that requires its filled specifier to be interpreted as an agent or causer (voice$^{*}_{+\theta}$), and one that requires its specifier to be non-thematic (voice$^{*}_{-\theta}$). As I argue further along, this latter *voice* is the type that occurs in *there*-insertion sentences. But in the derivation for the sentence in (88), all goes well if voice$^{*}_{+\theta}$ selects for the vP, as shown in (89).

89

(89)   Transitive voice*P

$$
\begin{array}{c}
\textit{voice}^*\text{P} \\[2mm]
\overbrace{\qquad\qquad\qquad} \\
\textit{voice}^*_{+\theta} \qquad \text{vP}
\end{array}
$$

voice*P

voice*$_{+\theta}$ vP

v   DP

$\checkmark$ AGREE

DP $\sqrt{\text{break}}$

a vase
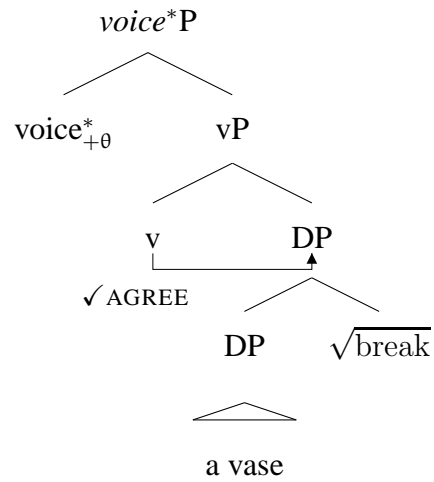
Let us say that when an argument is externally merged to the specifier of voice*$_{+\theta}$, the features of *voice** have been satisfied. Its complement domain can be sent to spellout. Finally, T^0 is merged, and the constituent in spec,voice*P can raise to satisfy the EPP feature on T^0. This is shown in (90).

(90)   TP for *Jamie broke a vase*

TP

Jamie

EPP

T   *voice**P

⟨*Jamie*⟩

voice*$_{+\theta}$ vP

v   DP

✓ AGREE

DP $\sqrt{\text{break}}$

a vase
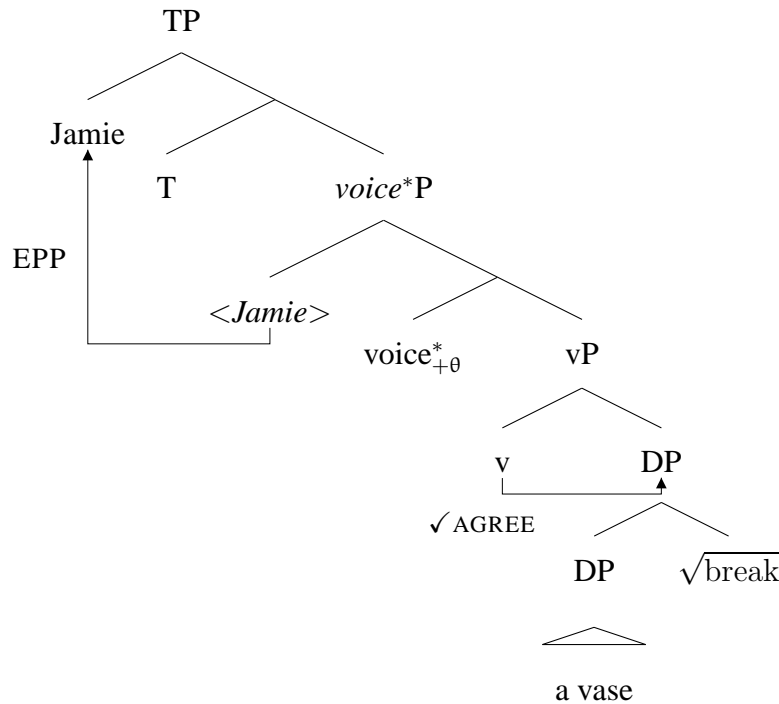
As with the derivation above, the verbal root raises to adjoin to *v* and then to voice*, though the tree in (90) does not show these movements.

If the non-thematic version of *voice** selected for vP, the derivation would crash. This is because in English, voice*$_{-\theta}$ is very selective; in general, its specifier can only be filled by a constituent like *there* or *it*. Both of these constituents are very limited in their distribution in English. The derivation as I have shown it does not include *there*, for example. Furthermore, in §3.2, I will pursue a hypothesis first argued for by Lasnik (1995), that *there* has selection constraints and that it is not simply an empty "expletive." This approach to expletives has influenced what has been called "low *there*" hypothesis associated with Richards and Biberauer (2005)

(who cite Bowers 2002) and Richards (2007); this hypothesis has been pursued more recently in Alexiadou and Schäfer (2009) and Deal (2009).

What were to happen if voice$^*_{-\theta}$ were to select for the agreeing vP? This possibility is shown in (91). I suggest that no position in the derivation in (91) satisfies the selectional requirements of *there*, so *there* cannot be merged in this structure. In standard English, no element other than *there* can be merged to spec,voice$^*_{-\theta}$.

(91)
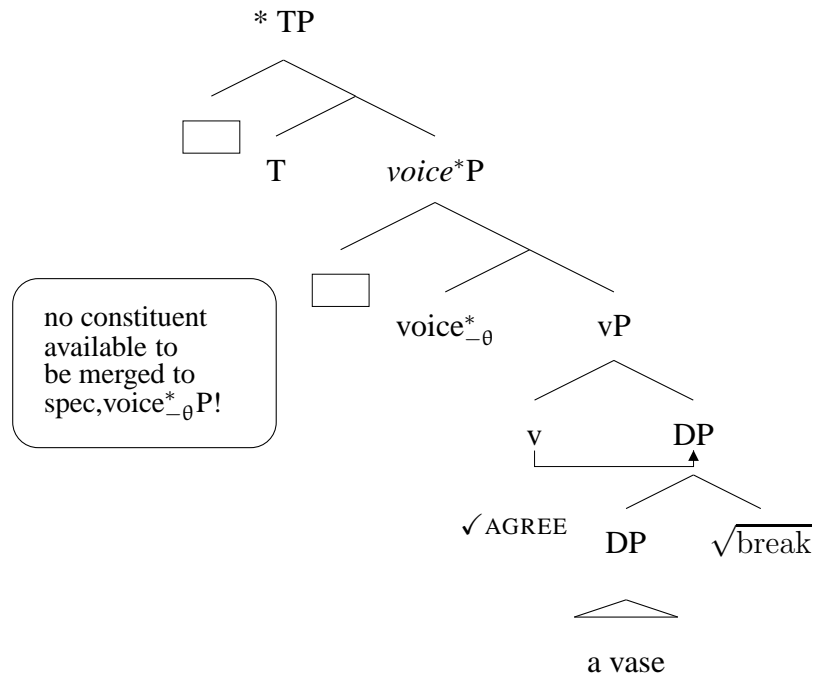
On the one hand, if there is no constituent in the derivation that can satisfy the features of voice$^*_{-\theta}$, then spellout of the complement domain of voice* will not occur, since satisfying the features of this head is a prerequisite for spellout. Perhaps the derivation might still continue, but then the unchecked features of voice* would crash

the derivation at the interfaces—in addition to the fact that T^0's unsatisfied EPP requirement would also crash the derivation.

3.2   Motion and existence unaccusativity

The tree for the complex complement structure in (81)B, repeated below as (92), is based on Moro's 1997 analysis of copular and existential sentences. In fact, I will argue that *arrive* sentences really are a kind of existential sentence, as we will see when we look at the consequences of these structures at the interface with information structure. The key properties of the tree in (92) are the following: the complement of *v* is a small clause (SC); the predication of the SC is between the direct object [DP some hippies] and a locative element [DP PLACE]; semantically, the predication is an existential one; and the element *there* is merged low in the vP (in the SC) as a modifier of the silent DP PLACE. I will discuss the role of silent PLACE further below.

(92)   The complex complement structure: Motion and existence unaccusativity

```
                          vP
                   ┌───────┴────────┐
                   │                SC
              ┌────┴────┐      ┌─────┴─────┐
              v   √rive        DP          │
                          ┌────┴────┐      DP
                       some hippies    ┌───┴───┐
                                       DP      a-
                                   ┌───┴───┐
                                 PLACE_here
```
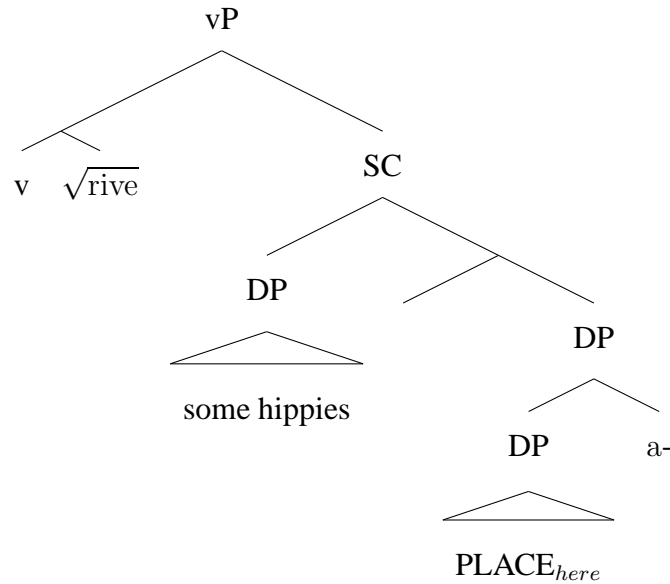
3.2.1   The Small Clause analysis

The nature of small clauses has been the subject of ongoing debate since Stowell (1983). By labeling the complement of *v* a SC, I mean to capture the notion that the two parts of this constituent are in a relationship of predication. Though I label this projection a SC, it could also be labeled a PredP—the analysis put forward here does not distinguish between these two predicational projections. Another property of SC structures that I mean to capture is the possibility that they consist of a symmetrical (possibly headless) relationship between two phrases, two XPs. Further, I will claim that the predication in existential/locative SCs is a locative one, involving an element that is fundamentally deictic.

Interestingly, Moro (1997) considers a structure like (92) as a possible analysis for non-*be* unaccusative verbs, but he dismisses it because the idea of a small

clause subject being a direct object would "undermine" the Unaccusative Hypothesis (Moro, 1997: 220). Now that we have examined the definition of unaccusativity in RG and how it translates into current generative syntax, we can see that Moro was actually right in proposing that SC subjects were direct objects; the two structural positions indicated in the trees in (93) do pattern together, as I have discussed above.

(93)   Two kinds of direct objects

  A.   "Standard" Direct Object   B.   Small Clause Subject

```
          VP                                        VP
         /  \                                      /  \
        V   ┌────┐                                V    SC
            │ DP │                                    /  \
            └────┘                                ┌────┐
                                                  │ DP │   · · ·
                                                  └────┘
```
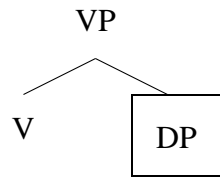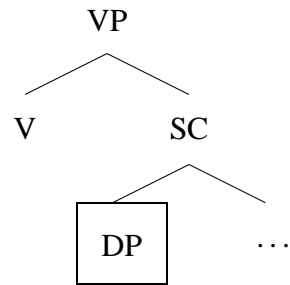
We can see, then, that nothing about the structure in (92) and (93)B undermines the Unaccusative Hypothesis. The SC subjects in these trees satisfy our definition of direct objecthood: both are VP-internal arguments that require structural case. But how do we know that the direct object in (92) is a small clause subject and not a "standard" direct object? One explanation comes from the configurational approach to argument structure: the complement in the simple complement structure (83), is always interpreted as a change of state. The DP in the complex complement structure as in (92) is in a different structural position and therefore not interpreted as undergoing a change of state.

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Another line of argument for the SC analysis comes from the interface with information structure. The SC structure consists of a semantically asymmetrical relationship between two phrases, a predication. In Chapter 4, I hypothesize that this asymmetry is one requirement for the introduction of new discourse referents. The idea that "presentation" is effected in an asymmetrical structure is one that goes back to Guéron (1980), who argued that the structure in which a verb c-commands a nominal is one that introduces a new referent. Although Guéron (1980) focused on syntactic asymmetry, I will argue that the relevant type of asymmetry is semantic. In this way I do not take a stand on whether SC structures are syntactically symmetrical or asymmetrical. I will discuss these ideas further in Chapter 4 by providing a more specific analysis in terms of domains in which the operation of existential closure (Heim 1982; Diesing 1992) can occur.

A more concrete argument in favor of the SC in (92) comes from *re*-prefixation. Horn (1980) is generally credited with the observation that the prefix *re-* requires a direct object and can thus be used as an unaccusativity diagnostic. Dowty (1979) also discusses similar observations regarding *re-*. More recently Marantz (2009a) and elsewhere has argued that this property of *re-* is structural, that *re-* attaches to a DP and that it does not attach to a SC or other branching structure.[2] Marantz (2009a) discusses data like the paradigm in (94), showing that *re-* is not acceptable in a sentence that is standardly considered to have a SC structure.

(94)   a.   I re-[whitened my teeth].

         b.   *I re-made [$_{sc}$ my teeth white].

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[2]Marantz (2007, 2009a,b) argues further that this structural constraint explains what Levin and Rappaport Hovav (1986: 631) call, in their discussion of adjectival passives, the "sole complement generalization."

Now observe in (95)–(96) that *re*-prefixation is acceptable with vPs that have what I call the simple complement structure.

(95)   a.   Jamie re-froze the carrot juice after it melted.

         b.   The carrot juice re-froze once Jamie put it back in the freezer.

(96)   a.   Dawn re-melted the candle wax after it started getting solid.

         b.   The candle wax re-melted once Dawn turned the heat back on.

Interestingly, though, *re-* is a bit less felicitous with change of state verbs in intransitive sentences. This is likely because *re-* introduces the presupposition that the direct object was in the end state before (Marantz, 2009a). The (b) examples in (95) and (96) thus require that we imagine the juice and the wax having previously been in a frozen or melted state. This pragmatic effect is especially strong with *break* (97).

(97)   a.   Devyn re-broke his sandal.

         b.   ?Devyn's sandal re-broke right after he fixed it.

Marantz's analysis predicts that *re-* should be unacceptable in the SC structure of (92). This prediction is generally borne out, as shown in (98).

(98)   a.   *The hippies re-arrived at the front door.

         b.   *A colorful bus re-pulled up at the curb.

But the prediction is not borne out by all of the roots that we might expect to occur in this structure. For example, verbs like *appear* and *emerge* can occur with *re-*, as shown in (99).

(99)   a.   The sandal re-appeared after being missing for days.

        b.   Jamie's mushroom allergy re-emerged.

This type of alternation is expected in the current framework, as I discuss in more detail below when we look at a variation in the complex complement structure.

3.2.2   Existential predication and the role of silent PLACE

We now return to the nature of the SC that is the complement of little-*v* in the complex complement structure, shown in (100). This tree shows the two obligatory elements in the predication that occurs in this small clause. In (100), I have left out the particle *a-* from *arrive*, which I analyze as an adjunct further modifying PLACE; I discuss the decomposition of *arrive* in §3.2.4 below.

(100)   Elements of the small clause predication
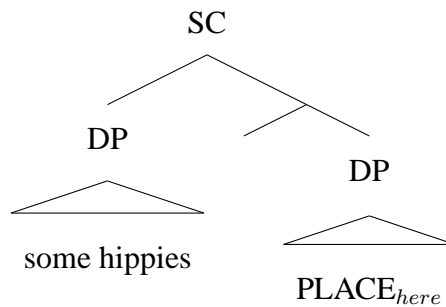
The type of small clause I assume here has the following key elements: the SC denotes a predication, and the predication is between two phrases, two XPs. In English, one of the elements in the SC must move out of it, though there are a number of considerations in this movement. Moro (2000) hypothesized that the relationship between the two XPs in the SC was symmetrical, and that this ambiguity of projection

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led to a breaking of symmetry, resulting in the obligatory movement of one of the XPs out of the SC.[3]

In English, the EPP forces one of the elements in the SC to move—regardless of whether we analyze SCs as symmetrical or as mediated by a functional head (and therefore asymmetrical). The fact that one of the elements in the SC domain must move derives alternations such as those in (101), which I will discuss further along in the section on *there*-insertion when we return to the English unaccusativity diagnostics.

(101)   Word order variations with *arrive*

      a.   A group of hippies arrived

      b.   A group of hippies arrived there.

      c.   There arrived a group of hippies.

As I have noted, the complex complement structure is very similar to Moro's (1997) analysis of existential sentences. Sentences with this structure therefore make them a kind of existential sentence. In the following paragraphs, I will use the terminology from the literature on existential sentences to discuss my analysis. I will argue that complex complement unaccusatives—i.e., *arrive*-type sentences—have the same elements of existential sentences as analyzed by Francez (2007).

Table 3.1, from Francez (2007: 9), gives the terminology that I will use for discussing existential sentences. The postcopular DP goes by different names: the "pivot" (a term usually used in the semantics literature) or "associate" (in the syntax literature); it is sometimes also called the "subject" or "argument". The material

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[3]See Chomsky (In Press) for a very recent discussion of these matters.

following this DP is referred to as the "coda". Francez puts "coda" in parentheses because crosslinguistically it is optional. One of Francez's claims, following McNally (1992), is that the coda is not a necessary element in an existential proposition.

expletive	copula	**pivot**	**(coda)**
there	is	some tofu	in the kitchen

Table 3.1: Terminology for existential sentences (from Francez 2007:9)

Recall that in languages other than English, pivots pass unaccusativity tests. We saw this in the Italian data, where *ne*-cliticization was acceptable with existential sentences, as in (38) from Chapter 2, repeated below as (102).

(102)   *Ne*-extraction in locative/existential sentences   (Italian)

a.   Ci   sono molti figli dei   fiori   nel   parco
     there are   many sons of-the flowers in-the park
     There are many hippies in the park

b.   Ce   ne   sono molti nel   parco
     there of-them are   many in-the park
     There are many of them in the park

We also saw that existential sentences in Russian pass the unaccusativity diagnostic, Gen-Neg. From these diagnostics we can conclude that the pivot in an existential sentence is syntactically a direct object. We also saw that direct objecthood diagnostics in Italian and Russian show that the "subject" of ordinary copular sentences is in most cases *not* a direct object, suggesting that existential and most copular sentences have a different syntactic structure. (Recall that some non-locative copular sentences do pass unaccusativity tests in Italian and French.)

Keeping in mind that the pivot of an existential sentence is a direct object, we can turn to one of the central claims in Francez (2007), a claim that informs my analysis of complex complement unaccusatives. Let us use the sentence in (103) as an example.

(103)   There is some tofu in the kitchen.

Francez (2007) claims that the main proposition of an existential sentence is not about the pivot (e.g., *the tofu*), but about a contextually-given location, and this contextually-given location functions as an implicit argument to the pivot (which he analyzes as a generalized quantifier). In my analysis, I represent this contextually-given location as the silent DP PLACE, in the spirit of Kayne (2005, 2010c). Although many authors argue that the main predication in existential sentences is between the pivot (e.g., *some tofu*) and the coda (e.g., *in the kitchen*), Francez observes that codas are not cross-linguistically obligatory in existential sentences. He therefore argues that codas are adjuncts, modifiers of the contextually-given location. I adopt this aspect of his analysis as well.

Syntactically, we might informally represent Francez's insight as shown schematically in (104), where (104a) shows the sentence without the coda, since it is optional, and (104b) shows the sentence with the coda, as a syntactic adjunct modifying PLACE.

(104)   a.   There is [some tofu PLACE]
         b.   There is [[some tofu [[PLACE] [in the kitchen]]]]

Francez's claim builds on previous arguments that location is fundamental to existential sentences. For example, Partee and Borschev (2004: 214), in their discussion of existential sentences and Gen-Neg, conclude that "existence is always relative to a 'LOCation', which may be implicit." This basic idea is also shared in well-known syntactic literature such as Freeze (1992) (though Francez and Freeze end up with significantly different analyses). Francez formalizes these insights in his analysis, and although I will not go deeply into this formalization, his basic insight is compatible with less formal approaches such as that of Erteschik-Shir (2007), who makes use of the notion of a "stage topic" (Francez, 2007: 71).

What is the nature of Francez's contextually-given location, the implicit argument that I implement as PLACE? Francez says that we can think of this argument, informally, as being what an existential sentence is "about." In other words, the main predication of an existential sentence concerns the "context or the discourse situation" (Francez, 2007: 126). Like Erteschik-Shir, I claim that the default value of this location is "here": PLACE$_{here}$.[4] For Francez, the implicit argument is more specifically a set that is contributed by the context, "a set of times, individuals or events" that constitutes the "contextual domain" of the proposition Francez (2007: 71).

My analysis thus incorporates insights from Francez (2007), but it also departs from Francez (2007) in two important ways. As I discuss further in Chapter 4, sentences with the complex complement structure satisfy particular conditions that I claim allow for the establishment of new discourse referents. I will claim that intransitive sentences with the simple complement structure do not satisfy these conditions.

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[4]Francez (2007: 62) argues against calling the default element "here" or "there," claiming that these approaches do not capture the "context sensitivity" of existentials.

In other words, the structural position of the pivot (a direct object) plays a key role in the establishment of discourse referents.[5]

(105)   A pivot (direct object) can be a new discourse referent

    a.   There is <u>some incense</u> in the box.

    b.   <u>Some hippies</u> arrived at the door.

My analysis departs from that of Francez (2007) in the status of the pivot. For Francez, the pivot is a generalized quantifier; it is a function that takes an implicit contextual set (something like my PLACE) as its argument. On my analysis, the pivot is not a generalized quantifier but (when it is an indefinite) a set of alternatives, following Kratzer and Shimoyama's (2002) Alternative Semantics approach to indefinites. As AnderBois (2010: 453) summarizes about this approach, "one of the core semantic properties of ordinary indefinites is to evoke a set of alternatives." We can think of a new discourse referent as being established when one of these alternatives is chosen.

Semantically, this "choosing" among alternatives occurs through the operation of existential closure ($\exists$C). [6] The notion of $\exists$C that I adopt is not that of the (unselective) binding of a variable, but rather, from the framework of Inquisitive Semantics, the closing off of the set of alternatives that is introduced by the indefinite. In this framework, Mascarenhas (2011) argues that $\exists$C is not a "free" operation; Mascarenhas argues that $\exists$C can only happen at certain points in the derivation. It is standardly assumed that vP (the VP of a Chomskyan system) is a point in the deriva-

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[5]The observation that the pivot of an ES can be a new discourse referent goes back to Prince (1981).

[6]See Cortés (1997) for an early argument that existential closure is available over direct objects in unaccusative sentences.

tion at which $\exists C$ can occur (Diesing, 1992). I propose that $\exists C$ has an additional requirement such that it is available only in the presence of a predication, where a predication is a (semantically) asymmetrical relationship between two phrases. The predication in the SC is what makes $\exists C$ available at vP, and this allows the SC subject to function as a new discourse referent. I discuss these details further in Chapter 4.

Although my analysis of unaccusative "complex complement" structures draws much from Francez's (2007) analysis of existential sentences, Francez argues *against* a SC analysis of existential sentences. I would like to suggest that Francez's dismissal of a SC analysis is premature. There is strong syntactic evidence and evidence from the syntax-information structure interface in favor of a SC analysis for existential sentences.

One of Francez's objections comes from the fact that many SC analyses posit a predication relationship between the pivot and the coda. As we have seen, Francez argues that codas are not obligatory, and, when they occur, they are syntactically adjuncts. I have shown that it is possible to have a SC analysis of existentials that does not involve a predication between the pivot and a coda. Just as in Francez's analysis, the predication in my analysis obtains between the pivot and a contextual locative-like element. On my analysis, the coda—a locative PP like *in the kitchen*—simply serves as a modifier of PLACE.

Another objection that Francez raises against the types of SC analyses he discusses is the fact that they analyze existential and copular sentences as having the same structure. Francez argues that existential and copular sentences are semantically different from each other. As we can see, I agree with Francez's objections, and I have provided data suggesting that these sentences are syntactically different

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from each other as well. We have seen from our unaccusativity diagnostics that the pivot in existential sentences passes direct object diagnostics. In most cases, the DP argument in copular predicate adjective and predicate nominal sentences does not pass unaccusativity diagnostics, though we have seen some data showing that this is not the case across the board. But there is much data showing that from a syntactic point of view, existential and most copular sentences should not have the same analysis. These differences between existential and copular sentences do not alone argue in favor of a SC analysis of existential sentences. But the fact that the direct object in existential sentences passes unaccusativity diagnostics does argue in favor of a SC analysis of existential sentences, since SC subjects are direct objects. In copular sentences, the domain of predication may indeed be a "small" one, but the type of syntactic structure involved in copular sentences cannot in most cases be a SC as I have defined it here.

3.2.3 Derivational domains in the complex complement structure

The derivation of a sentence like the one given in (106) has some of the same elements that we saw in the derivation for *a vase broke* in (86).

(106)   Some hippies arrived.

As with (86), the derivation for (106) crucially involves a *v* that does not agree with the direct object, in this case, *some hippies*. This lack of agreement means that the direct object is not licensed within the vP. As with (86), voice⁻ selects for the vP, and the phase—the cycle of syntactic operations—is extended. Just as in (86), T can enter into an agreement relation with the direct object and thereby license it. The direct

object can then A-move to spec,TP to satisfy the EPP feature on T. This derivation is shown in (107).

(107)   Some hippies arrived.

TP
DP
a vase
T
voice⁻P
voice⁻
vP
v √rive
SC
DP
some hippies
DP
DP
a-
PLACE_{here}
EPP
AGREE
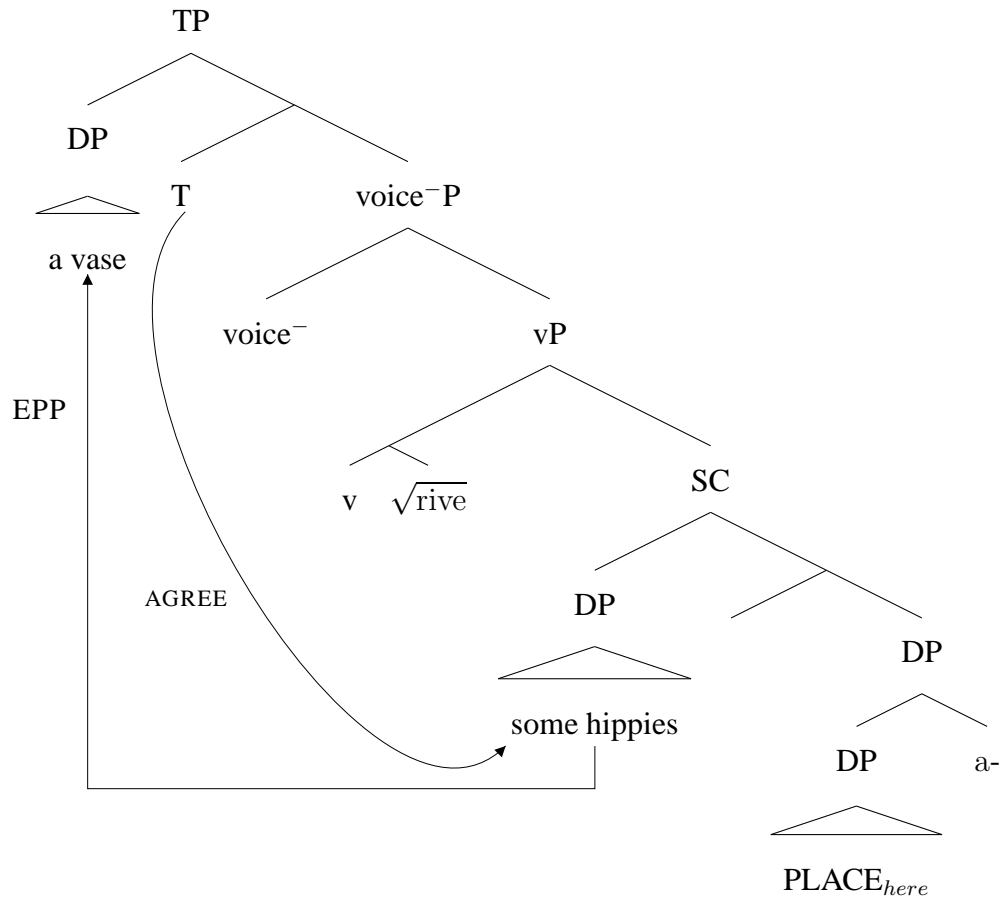
3.2.4 The decomposition of *arrive*-type verbs

In my analysis, *arrive* is decomposed into a root and a locative morpheme. This decomposition was first proposed in Moro (1997) in his discussion of unaccusative

and expletive sentences in Italian. Moro (1997: 232) proposes that verbs in Italian like *arrivare* be analyzed as involving a predicate within a SC that incorporates into a V^0 node higher up (though he leaves aside the details of how incorporation might work). Following up on this idea in a footnote, Moro suggests that what incorporates might be a "locative particle" rather than what we think of as the verb itself, and he observes that many other unaccusative verbs in Italian may be morphologically decomposed in this way: *di-scendere* (to descend), *per-venire* (to reach), *ac-correre* (to run) (Moro, 1997: 291, fn. 19).

In the current analysis, incorporating Moro's insights entails that *arrive* is not actually a root but a complex morpheme, and the relevant root is $\sqrt{\text{rive}}$. The tree for the complex complement structure (92)—the one that existence/appearance unaccusatives participate in—is repeated below as (108).

(108)   Complex complement structure
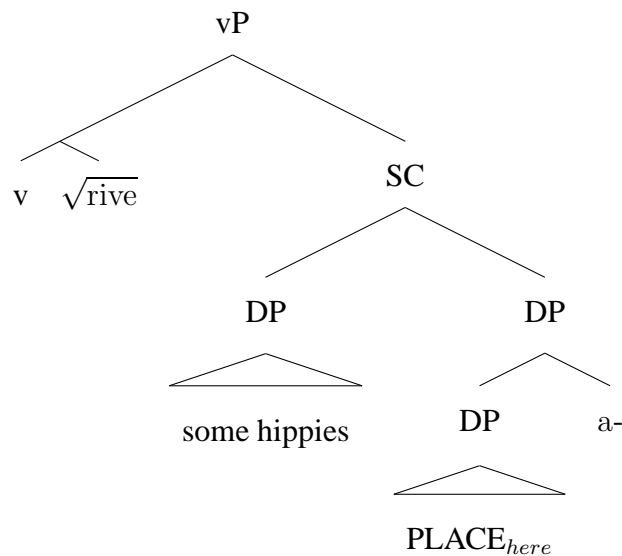
The root $\sqrt{\text{rive}}$ must be a bound morpheme, since we never see it without a-, and the $[v \; \sqrt{\text{rive}}]$ constituent selects for a locative small clause. This SC is locative because, as I have argued, one of its constituents is the locative DP, PLACE. In addition, the distribution of the $[v \; \sqrt{\text{rive}}]$ constituent is further restricted in that it can only select for a PLACE DP that is modified by a-.

But what is a-? I will call it a particle but remain agonistic as to what a particle actually is. One fact that we do know about sentences with particles is that verbs and particles often move around each other in interesting ways. In the case of a-, we know that it always moves to prefix to $\sqrt{\text{rive}}$. From one perspective, the decomposition of *arrive* is counterintuitive, since I claim here that a- first starts out in a constituent with PLACE, not with $\sqrt{\text{rive}}$, but then later in the derivation finds its home as a prefix to $\sqrt{\text{rive}}$. But from the perspective of Germanic syntax, this behavior is not so unusual. Not only is a- a common prefix in English, but prepositions and particle-like elements in other Germanic languages do move in ways similar to the movement I propose for verbs like *arrive*. In Dutch, *aankomen* 'to arrive' can surface with verb and particle together, as in (109a), or separated (109b)–(109c).[7]

(109)   Dutch separable verb *aankomen* 'to arrive'   (Dutch)

      a.   De hippies zijn in Amsterdam aangekomen
            the hippies are in Amsterdam arrived
            The hippies arrived at Amsterdam

      b.   De hippies komen in Amsterdam aan
            the hippies come   at Amsterdam to
            The hippies arrived at Amsterdam

      c.   De hippies komen aan in Amsterdam
            the hippies come   to   at Amsterdam

---

[7]Thanks to Marcel den Dikken and Suzanne Dikker for judgments on the Dutch data.

The hippies arrive at Amsterdam.

When the object of the preposition is a pronoun, the preposition must move and join the pronoun (110).

(110)   Dutch particles with *er*   (Dutch)

    a.   De   hippies gaan **er**heen
        The hippies go   there-away/to
        The hippies go there

    b. *De hippies gaan heen   **er**
        the hippies go   away/to there
        The hippies go there

When we consider the fact that in languages like Dutch and German, particles can sometimes be stranded and other times must stay with the verb (or cliticize to a pronoun), then the behavior of English a- does not seem so strange: one of its properties is that it cannot be separated from the verb.

The structure that verbs like *arrive* and *appear* occur in is very common in English, and I propose that the complex complement structure occurs most productively with what might descriptively be called "particle verb" constructions, such as *come in* or *drive up*. These particles have the property that they do not prefix to the verb (111).

(111)   English "verbs" in the complex complement structure

    a.   A colorful van pulled up.

    b.   Some hippies came in.

    c.   Some mushrooms showed up.

d. A cab drove up.

e. Tigger bounced in.

As I discuss further in Chapter 4, sentences like those in (111), using the complex complement structure, exploit the most common way of introducing new discourse referents when that introduction is done with an intransitive sentence. And note that my claim is that the particles *up* and *in* do not "modify" the overt DP arguments in these sentences; rather, they add further specificity to the the silent, contextually determined DP, PLACE. So in (111) we have [up PLACE] and [in PLACE]. Sentence (111a) is analyzed as in (112), as are the other sentences in (111).

(112) *A van pulled up*
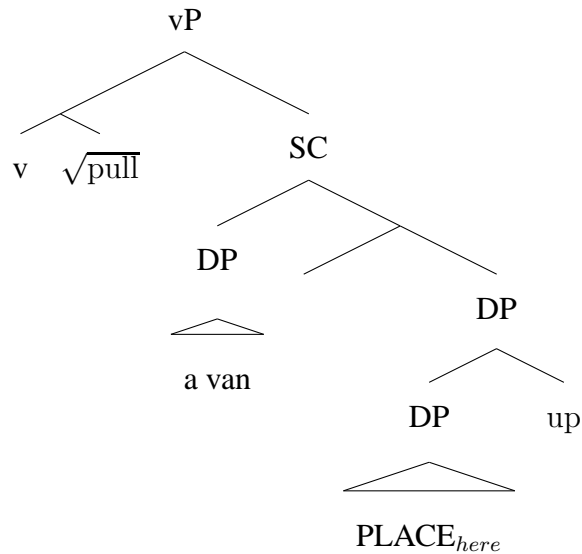
As discussed above, further modification of PLACE with a PP is possible. Like up or a-, this modification is an adjunct, as shown in (113).

(113)   *A van pulled up to the curb*

```
                        vP
                   ____/  \____
                  /            \
                 /              SC
            v  √pull      ____/  \____
                         /            \
                        DP             \
                      /____\            DP
                      a van        ___/  \___
                                  /          \
                                 /            PP
                                DP   up     /__\
                              /____\      to the curb
                           PLACE_here
```
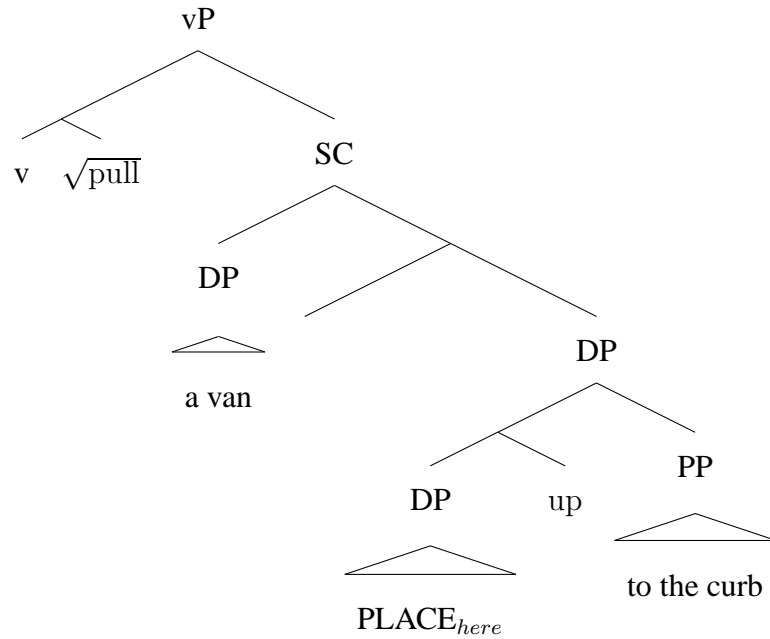
The interpretation of PLACE is contextually determined, as in Francez's analysis, though I have stipulated that its default interpretation is *here*. Further modification of PLACE$_{here}$ can be done with temporal PPs such as *during the ritual*, or spatial/directional modifiers like *to the curb*, as in sentence (113). PLACE on my analysis thus serves as a spatial and/or temporal location, along the lines of Erteschik-Shir's (2007) stage topic.

Recall that the view of argument structure in this dissertation holds that the structure that a verbal root occurs in contributes to meaning. The simple complement structure denotes a change of state, and so if we can conceive of the event denoted by a verbal(ized) root as denoting the end state of a change-of-state event, then the root can occur in the simple complement structure. This point of view is akin to the one that Kratzer (2003) describes in her discussion of the productivity of resultatives with

activity verbs: "Not every intransitive verb describes an activity that can be readily understood as creating things. But with a little imagination, suitable scenarios can be found even for activities like sneezing holes into a wheel of cheese" (Kratzer, 2003: Chapter 3, 14). I would like to make a similar argument regarding the complex complement structure, the structure that I will argue in Chapter 4 can serve to introduce new discourse referents. It might be tempting to think that the verbs in sentences with the complex complement structure are in some way "existential" verbs, and that the lexical content of the verb is what allows for the establishment of new discourse referents. I propose, on the other hand, that it is the complex complement structure itself that provides this "existential" content, and that the verbal root does not carry this burden. Indeed, activities like driving, pulling, and bouncing as in (111) do not in themselves denote "coming on the scene." But these verbal roots can modify a little-*v* that selects for a SC structure in which one of the elements in PLACE; I propose that this is what allows these "verbs" to introduce new discourse referents.

3.3   Interface considerations

What are the interface effects of the structures given in (80)? Do the structural differences between these trees make a difference at PF or at LF? I will argue that for the assignment of sentence accent, the differences between these structures—shown in more detail in (83) and (92)—do not have an effect. In Chapter 3, I provide an analysis for the finding in Irwin (2011) that in contrast to unergative sentences, all-new unaccusative sentences with both the simple complement and the complex complement structure are pronounced with phrase stress on the subject DP (see Zubizarreta and Nava 2011 for another study supporting this claim). In other words,

the syntactic differences between the simple complement structure and the complex complement structure do not make a difference for the assignment of phrase stress, except when *there* in the latter structure is overtly pronounced and moves to spec,TP.

At the syntax-information structure interface, on the other hand, the differences do have effects. I will argue in Chapter 4 that the direct object in the complex complement structure can function as a new discourse referent in the same way that a transitive direct object can. I have proposed that the predication in the SC makes $\exists$C at the vP available. The simple complement structure cannot establish a new discourse referent in the same way. I will argue below that the simple complement structure does not involve a predication of the relevant sort, and so I argue that this structure does not make $\exists$C available at the vP level. In Chapter 4, I discuss the notion of 'discourse referent' in more detail, and I describe a corpus study supporting the claim that only a subset of unaccusative sentences are used to introduce new discourse referents.

3.4 Returning to the English unaccusativity diagnostics

Having examined in some detail two unaccusative structures, we now return to the English unaccusativity diagnostics to see how the results of these diagnostics fall out from these two unaccusative structures. Recall that English has three primary unaccusativity diagnostics: the causative/inchoative alternation, the resultative construction, and *there*-insertion. The two unaccusative structures we have discussed are shown below in (114).

(114)   The simple complement structure and the complex complement structure

A.   *A vase broke.*   B.   *Some hippies arrived.*

```
        vP                                              vP
       /  \                                            /  \
      v    DP                                         /    \
          /  \                                      /        \
        DP   √break                               v  √rive    SC
       /__\                                                   /  \
      a vase                                                DP    \
                                                           /__\    DP
                                                       some hippies  /  \
                                                                   DP    a-
                                                                  /__\
                                                             PLACE_{here}
```
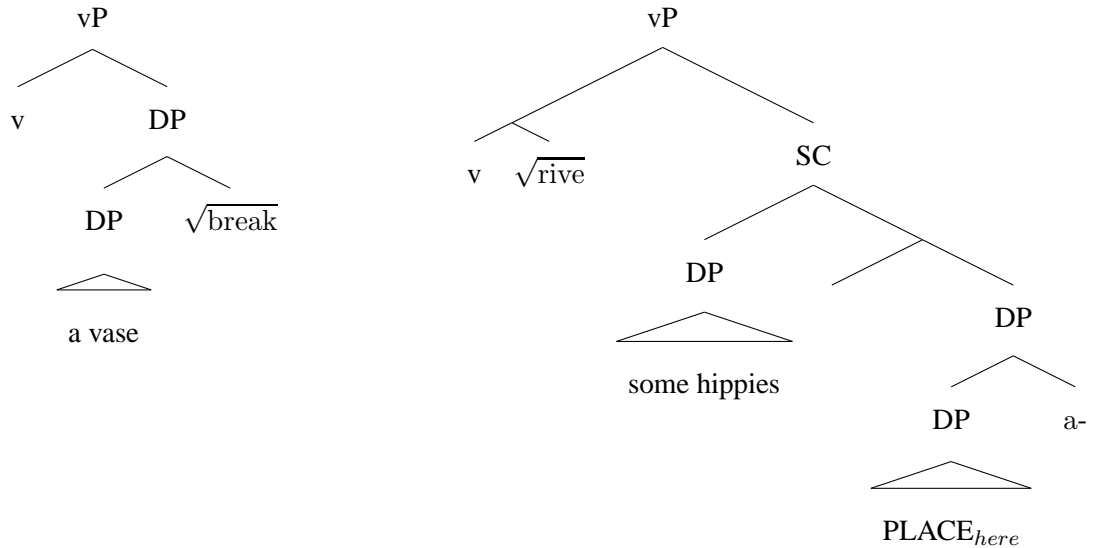
We will see that the causative/inchoative alternation and the resultative construction both diagnose structure (A). The types of roots that are associated with structure (A)—usually those that denote changes of state—are the ones that can undergo transitivity alternations and can be followed by resultative adjectives.

The third diagnostic, *there*-insertion, picks out (B), the complex complement structure. As we have seen, some roots, like *dart* can also occur in *there*-insertion sentences, as shown in (115b).

(115)   *there*-insertion with *dart*   (Levin, 1993: 89)

    a.   A little boy darted into the room.

    b.   There darted into the room a little boy.

Roots like *dart* stereotypically occur in configurations with external arguments, configurations which are, by definition, not unaccusative. In older approaches to unaccusativity, approaches that classify "verbs" as unergative or unaccusative, *dart* would be considered an unergative verb. On the analysis here, the fact that *dart* can occur with *there*-insertion means that it can occur in structure (B). I would like to suggest, then, that the real question about sentences like (115b) is not whether they are unaccusative or not: they *are* unaccusative; the real question is what these sentences mean, and how we derive this meaning from the unaccusative syntax.

To answer these questions, we must look to the syntax-information structure interface. I will claim that sentences like (115b) are used to introduce new discourse referents. The observation that *there* sentences have very particular information structural properties has been made throughout the literature, from Milsark (1974) through Deal (2009). A more difficult question is why it is the case that some roots (like *dart*) can occur in structure (B), and why some roots cannot (or at least do not).

3.4.1   The causative/inchoative alternation

The simple complement structure (114)A is one that allows causative/inchoative alternation. Recall that I hypothesize, following Marantz (2005, 2009a), that this structure has a very specific interpretation: the configuration [*v* DP] is interpreted as a caused change of state, with the DP interpreted as undergoing this change of state. This configuration brings about the interpretation that there is a change of state event. The root is shown as a modifier of the DP in order to indicate the fact that it denotes the end state of the event. In this case, (116a), for example, that end state can be

described as "broken." Because the configuration [*v* DP] is interpreted as a *caused* change of state, the semantic possibility for an overt causer exists.

(116)   Causative/inchoative alternation with *break*

   a.   A vase broke.   (*inchoative*)

   b.   Jamie broke a vase.   (*causative*)

Historically, analyses of causative/inchoative alternations often assumed that one of the alternants had to be primary, and the other one was derived from this primary form. For example, Levin and Rappaport Hovav (1995) and Reinhart and Siloni (2005) take the transitive (causative) alternant to be primary, and they derive the intransitive (inchoative) through a lexical process of de-transitivization. The problems that arise in such analyses have been discussed in detail by Alexiadou et al. (2006a) and Schäfer (2008: 133–139) and has origins in Marantz (1984) (as noted in Pylkkänen 2008 [2002]: 127, fn. 17). The approach taken here follows that of Alexiadou et al. (2006a), Pylkkänen (2008 [2002]), Ramchand (2008), and Schäfer (2008) in that neither the transitive nor the intransitive is derived from the other.

On this approach, then, the constituent shown in (117) is interpreted as a caused event (see Schäfer, 2008: 140).

(117)   [v [$\sqrt{\mathrm{Root}}$ + DP]]   *caused event*

The syntax of causation shown in (117) forms the basis for both inchoative and causative change-of-state sentences. We saw the derivation of an inchoative change-of-state sentence like (116a) in (86). In this derivation, *v* does not agree with the DP,

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voice$^-$ is merged next, extending the phase, and T^0 agrees with the DP. But what about a causative sentence with a root like *break*, such as (116b)?

The derivation of a transitive causative sentence like (116b) contains a vP in which *v* agrees with—licenses—the direct object. This licensing results in a vP that can be shipped off to the phonological and interpretive interfaces at the voiceP level. The derivation of a transitive causative sentence, as shown in (118), consists of two relevant phases. This phasal makeup is in contrast to that of the intransitive inchoative sentence, as shown in (86), which has only one phase.

(118)   Causative sentence: *Jamie broke a vase*

```
                    TP
                   /  \
             Jamie     \
              ↑     /    \
              |    T    voice*P
              |        /    \
              |    <DP>      \
              |    Jamie  voice*   vP
              |                   /  \
              |                  v    DP
              |                  |    ↑
              |              AGREE   / \
              |                    DP   √break
              |                    /\
              |_____       a vase
```
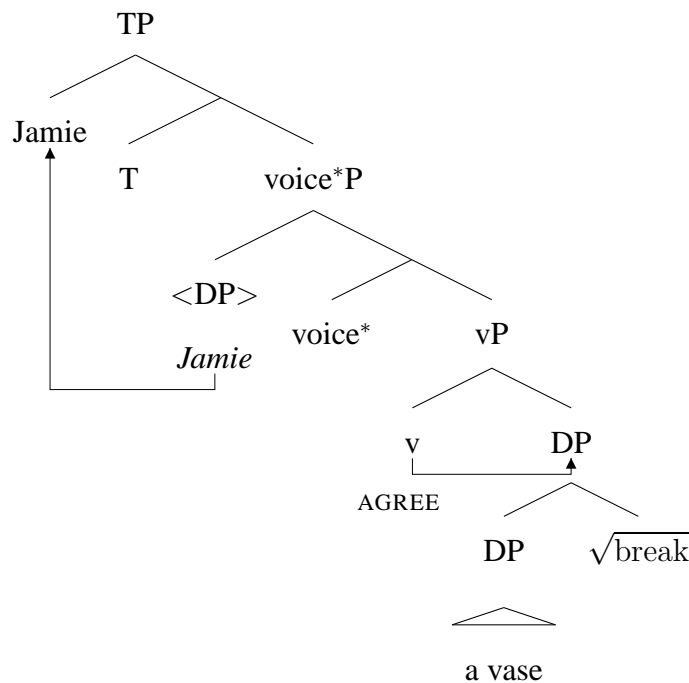
An important feature of the derivation in (118) is the fact that *v* agrees with the direct object. This agreement relationship licenses the direct object, and as a

consequence, the vP is selected for by a phase-ending head, voice*. This variant of *voice* requires a specifier. As discussed above, I hypothesize that voice* comes in more than one variety. In a causative sentence like (118), voice* determines the interpretation of its specifier as an agent or causer. I will refer to this version of *voice* as voice*$_{+\theta}$ as a reminder that we can think of the specifier of this head as receiving a "theta role". We will see that voice* can require that its specifier be something that is *not* interpreted as an agent or causer; I refer to this variant of voice as voice*$_{-\theta}$.

3.4.2 The resultative construction

The resultative construction as an unaccusativity diagnostic picks out the simple complement structure, as shown in (114)A. To put it another way: the simple complement structure allows for resultative adjectives, leading to the impression that the types of roots that can occur in this structure allow resultative adjectives. In this section, I will show that there are semantic reasons for why the resultative and the causative/inchoative diagnostics pick out the same syntactic structure.

Recall that I focus here on adjectival resultatives rather than PP resultatives, following Kratzer's (2005) advice that we limit the analysis to constructions with the same distribution. As we have seen, "resultative" prepositional phrases (i.e., sentences whose Result XPs are PPs) have a much broader distribution than adjectival resultatives, in part because Result PPs have an overt functional head (the preposition) that makes the connection between the direct object DP and the result XP. From this perspective, adjectival resultatives—sentences with Result XPs that are AdjPs—are particularly interesting, because they lack a mediating overt head.

Consider the sentence in (119), in which the result XP is *solid*. On the analysis here, *solid* is syntactically an adjunct and semantically a modifier of the end state denoted by the DP *carrot juice*, also modified by the root $\sqrt{\text{freeze}}$.

(119)   The carrot juice froze solid.

The analysis of this sentence is shown in (120).

(120)   The carrot juice froze solid.
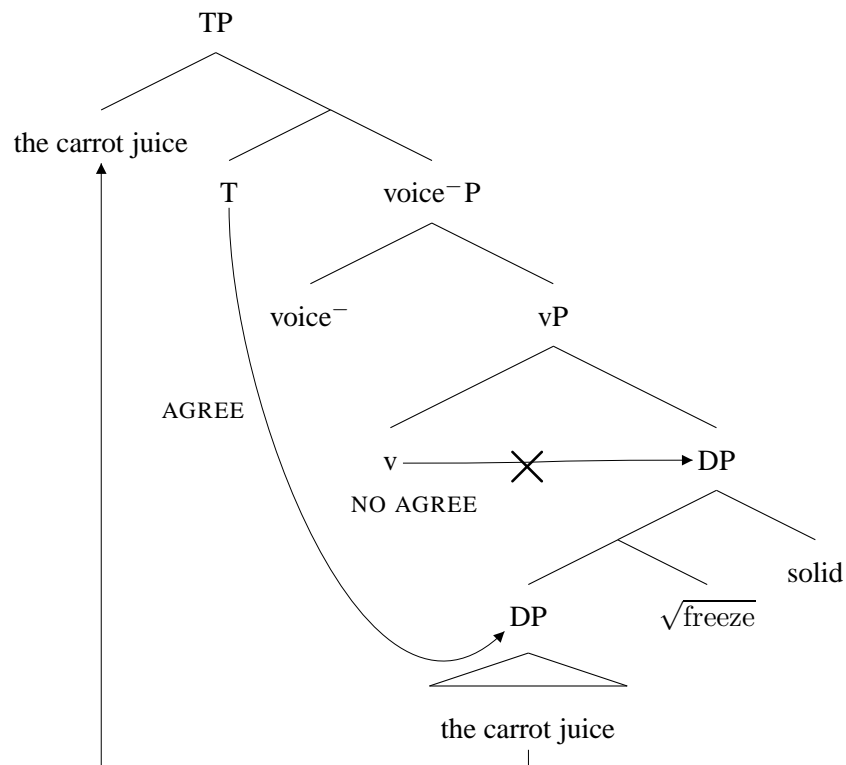
To bring further insight into the tree in (120), it is helpful to review the assumptions about event structure that play a role in this analysis. Following Marantz

(2009a: 3), I assume that change of state VPs have the event structure shown in (121), where the parts of the structure that denote events have been labeled.

(121) Change-of-state event structure

```
                    vP
                   ╱╲
             ┌───┐┌──────────┐
             │ v ││    DP     │
             └───┘│          │
            event 1│   ╱╲     │
                  │ DP  √Root │
                  └──────────┘
                    event 2
```
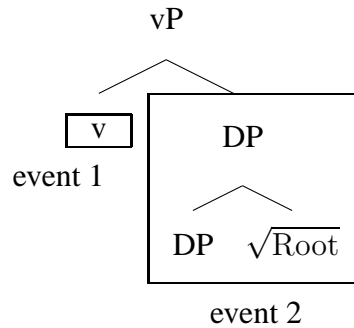
Change of state VPs involve a configuration in which we have an eventive *v*, whose complement is a DP modified by a verbal root, like *freeze*. This eventive *v* (*event 1*) does nothing more than say that there is an event; because this *v* is not modified by a root, it does not denote on its own what sort of event it is. *Event 2* consists of a DP modified by a $\sqrt{\text{Root}}$. The [DP $\sqrt{\text{Root}}$] configuration is interpreted as a change of state event, where the root denotes the end state of the DP, which is interpreted as undergoing the change of state. Note that this is the constituent that would in previous approaches be analyzed as involving a predicate like BECOME. The configurational approach comes into play when the sister of *v* is a [DP $\sqrt{\text{Root}}$] configuration. When *event 2* is the complement of *v*, the whole vP is interpreted as a caused change of state event, where *event 1* is interpreted as causing *event2*. In this system, this causing relationship is an interpretive consequence of the syntactic structure: there is no CAUSE head effecting the interpretation that *event 1* causes *event 2*.

In the analysis shown in (120), then, the Result AdjP is a further specification of the end state of the DP that undergoes the change of state. One question that arises from the fact that the Result AdjP is simply an adjunct is why there can only be one of them. In other contexts, we can stack up adjectives with no problem (122).

(122)   The *fresh, tasty* carrot juice froze solid.

But with resultative adjectives, only one adjective is permitted, as shown in the paradigm in (123).

(123)   a.   The carrot juice froze *smooth*.

          b.   The carrot juice froze *solid*.

          c.   *The carrot juice froze *smooth solid*.

On the other hand, further modification of the end state of the direct object *is* acceptable with a PP, as shown in (124).

(124)   The carrot juice froze *solid into little cubes*.

Examples like (124) suggest that the unacceptability of (123c) is not structural.

The unacceptability of (123c) may be due to a more general restriction in English on the stacking of post-nominal adjectives. For example, although sentence (125a) is acceptable with two pre-nominal modifiers, a similar sentence with multiple post-nominal AdjPs is unacceptable (125b).

(125)   a.   There's a [stoned] [sleeping] hippie on the couch.

          b.   *There's a hippie [stoned] [asleep] on the couch.

I conclude from these examples that the restriction on the stacking of post-nominal adjectives in English is an issue that is separate from the syntax of resultatives.

Another issue that may have to do with the distribution of adjectives in English and not with resultatives in general is the fact that resultative adjectives with unaccusative vPs are very constrained. For example, although carrot juice can be described as *tasty*, this adjective cannot be used to modify the result state of freezing, as shown in (126a). Similar observations can be made about other change of state vPs, as shown in (126).

(126) a. *The carrot juice froze tasty.

b. *The door opened tiny.

c. *The bottle of Boone's broke sharp.

The analysis of resultatives with unaccusative vPs here differs from accounts that analyze resultatives as having a SC structure. We might see Kratzer (2005) as in this family of SC analyses. It should be immediately noted, however, that the types of resultative sentences that Kratzer analyzes are of a different sort than the unaccusative resultatives I have been discussing here. In fact, unaccusative resultatives do not qualify as "true" resultatives at all, according to Kratzer (2005). The types of resultatives that Kratzer focuses on (mostly for German) are the classic ones like those in (127).

(127) a. Dawn drank the teapot dry.

b. Devyn hammered the metal flat.

Kratzer (2005) argues that resultatives are built on vPs that do *not* contain direct objects. This claim is contrary to the Direct Object Restriction (DOR) on resultatives (Levin and Rappaport Hovav, 1995). If Kratzer is right, then it would appear that the resultative construction does not diagnose direct objecthood, and we would have to conclude that it is not an unaccusativity test. But the types of resultatives that Kratzer (2005) discusses have a different interpretation than the unaccusative ones that we have been considering here. Kratzer's resultatives are built from activity verbs that can be used intransitively and which, according to Kratzer's analysis, take a SC complement. In Kratzer's analysis, the adjective in the SC raises to a CAUSE head, and this movement brings about the interpretation that the activity event causes the change of state event. For comparison with the analysis that I propose, I will represent Kratzer's analysis without the CAUSE head; my version of Kratzer's analysis for sentence (127b) would be (128).

(128)   SC analysis of resultatives, in the spirit of Kratzer (2005)
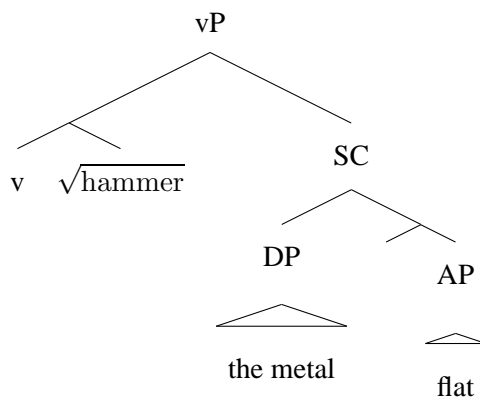
The interpretation of (128) can be paraphrased as the following: there was a hammering activity, and there was a change of state such that some metal became flat,

and—this is the CAUSE part—there is a causing event which consists of a hammering activity causing the metal to become flat. As in the analysis that I propose, a causer can be added via a voice head, adding the information that there is an agent of the hammering activity (e.g., *Devyn*).

It is important that we get the interpretation not just that there's a hammering event and a becoming flat event and a causal relationship between them, but that there's a hammering event and a becoming flat event and, in addition, an event of hammering causing the becoming-flat event. Kratzer (2005: 196) gives the example that if she drinks all the water in someone's well, then she cannot say that she drunk the teapot dry, since this would be an indirect cause. But still, if my paraphrase of a sentence on Kratzer's analysis is correct, then we can see the metal is not necessarily a direct undergoer of the hammering activity. In Kratzer's analysis, the metal is a direct object of a sort, since it is an object of the verb, but it is not the type of direct object we have been talking about. Another example might bring out the right interpretation.

(129)   Devyn hammered the neighbors awake.

I think that Kratzer's point is that if we had a situation in which Devyn did a lot of hammering, and this hammering caused some dogs to bark, and the barking of the dogs caused the neighbors to wake up, then we could not say (129). According to Kratzer, we can only say (129) if Devyn's hammering was the direct cause of the neighbors' waking up. But as long as we keep this in mind, it remains the case that Devyn did not hammer the neighbors (just as when you drink the teapot dry, you don't drink the teapot itself).

Let us now return to the cases with unaccusative vPs. These are cases with true direct objects, and so I would like to propose that a sentence like (119), repeated below as (130), does not have the structure or the interpretation as the type of resultative that Kratzer talks about.

(130)   The carrot juice froze solid.

On my analysis, the paraphrase for (130) would be: there's a caused event of some juice undergoing a change of state, and the end state of that change is "frozen," and we can further describe that frozen state as "solid."

In addition, I would like to suggest that sentence (119) *could* have the interpretation that comes with Kratzer's structure. In other words, we could imagine a situation in which freezing is interpreted as an activity, perhaps the sort of thing one does at the end of the summer, when the garden has produced a lot of vegetables that one wants to blanch or juice and save for the winter. In the case of freezing as an activity, there could be an event of some juice becoming solid, and the freezing activity is the direct cause of the juice becoming solid. This would mean that a sentence like (119), repeated below as (131), is structurally ambiguous.

(131)   The carrot juice froze solid.

If a resultative sentence like (131) is structurally ambiguous between the analysis I propose in (120) and a SC representation like (128), then the sentence can be disambiguated syntactically by a test that distinguishes between a SC structure and a simple direct object structure. Such a diagnostic is *re-* prefixation, as proposed by Marantz (2009a).

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As discussed above, *re-* requires a direct object and can be used as an unaccusativity diagnostic. Using contrasts like those in (132), Marantz (2009a) shows that *re-* does not attach to branching structures like SCs or to 2-argument verbs (which may be analyzed as involving SCs), as shown in the paradigm in (132).

(132)   *re-* does not attach to SCs

  a. I re-whitened my teeth.

  b. *I re-made my teeth white.

  c. *Jamie re-put the granola in the cupboard.

These facts mean that *re-* can distinguish between unaccusative resultatives (those with simple direct objects) and activity resultatives of the SC type (the ones that Kratzer (2005) analyzes). Whenever *re-* prefixation is possible, we do not have a SC structure. Notice that in contrast to (132a), *re-* prefixation is acceptable in vPs with change of state unaccusatives, as shown in (133).

(133) a. The carrot juice re-froze solid.

  b. The door re-opened wide.

  c. The bottle re-broke open.

Marantz also makes a point about the interpretation of the scope of *re-* and the result XP in cases like (133). For example, in (133a), the interpretation is that when the carrot juice was frozen before, it was also frozen solid; it's now frozen solid again. This line of reasoning predicts that the sentence in (134) is not acceptable.

(134)   ?*The carrot juice froze smooth, and then it re-froze solid.

In unaccusative *re-* sentences, then, we might say that the result XP is within the scope of *re-*.

When resultatives occur with direct objects in transitive sentences, on the other hand, the result XP is interpreted as outside the scope of *re-*. Consider the sentence in (135), for example.

(135)   Devyn re-hammered the metal flat.

In (135), the metal does not have to have been hammered *flat* before; it simply has to have been hammered. We can illustrate this in a sentence like (136).

(136)   Devyn hammered the metal bumpy, and then he re-hammered the metal flat.

The classic resultative sentences with *drink* can *only* occur in a SC structure, and as predicted they do not allow *re-* prefixation, as shown in (137).

(137)   *Dawn re-drank the teapot dry.

3.4.3   *There*-insertion

As we have seen, *there*-insertion is arguably the only deep unaccusativity diagnostic that English has. This means that in a *there*-insertion sentence, the direct object stays in situ, in a vP-internal position, throughout the derivation. Sentences with *there*-insertion and non-BE verbs occur in what I have been calling the "complex complement" structure. In this section I will review the elements of my analysis of unaccusative *there*-insertion sentences, and then I will turn to two specific topics that

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come up in the analysis: the nature of *there*, and the possibility of *there*-insertion sentences that do not have the complex complement structure.

My analysis of *there*-insertion sentences has five important elements: (1) the complement of *v* is a SC; (2) the predication of the SC is between the direct object (a SC subject) and a locative/deictic element [$_{DP}$ PLACE]; (3) semantically, this predication is an existential one; (4) *there* is merged low in the vP as a modifier of the SC complement PLACE; and (5) *v* agrees with the direct object, resulting in the merger of strong *voice*, requiring a non-thematic specifier (voice$^*_{-\theta}$). In analyzing *there* sentences as existential, I draw on work discussed earlier in this chapter hypothesizing that the predication of existence is always in relation to a location (Partee and Borschev, 2004), and that this location is a contextually-relevant element that may be implicit (Francez, 2007). The analysis departs from that of Francez (2007) in the syntax of the predication, which I have argued occurs by means of a SC.

Recall that a derivation that begins with the complex complement structure can result in either a *there*-insertion sentence or an intransitive sentence, as shown in (138).

(138)   a.   There arrived a bunch of hippies.

       b.   A bunch of hippies arrived.

Whether the end result of the derivation is a *there*-insertion sentence like (138a) or a simple intransitive sentence like (138b) depends on whether *v* agrees with the direct object. Sentences with *there*-insertion have a direct object that is licensed in situ through agreement with *v*, within the vP. This licensing forces the merger of the

phase-ending head, *voice**. The element *there* subsequently moves to satisfy the EPP feature of T^0. This derivation is shown in (139).

(139)   There arrived a group of hippies.
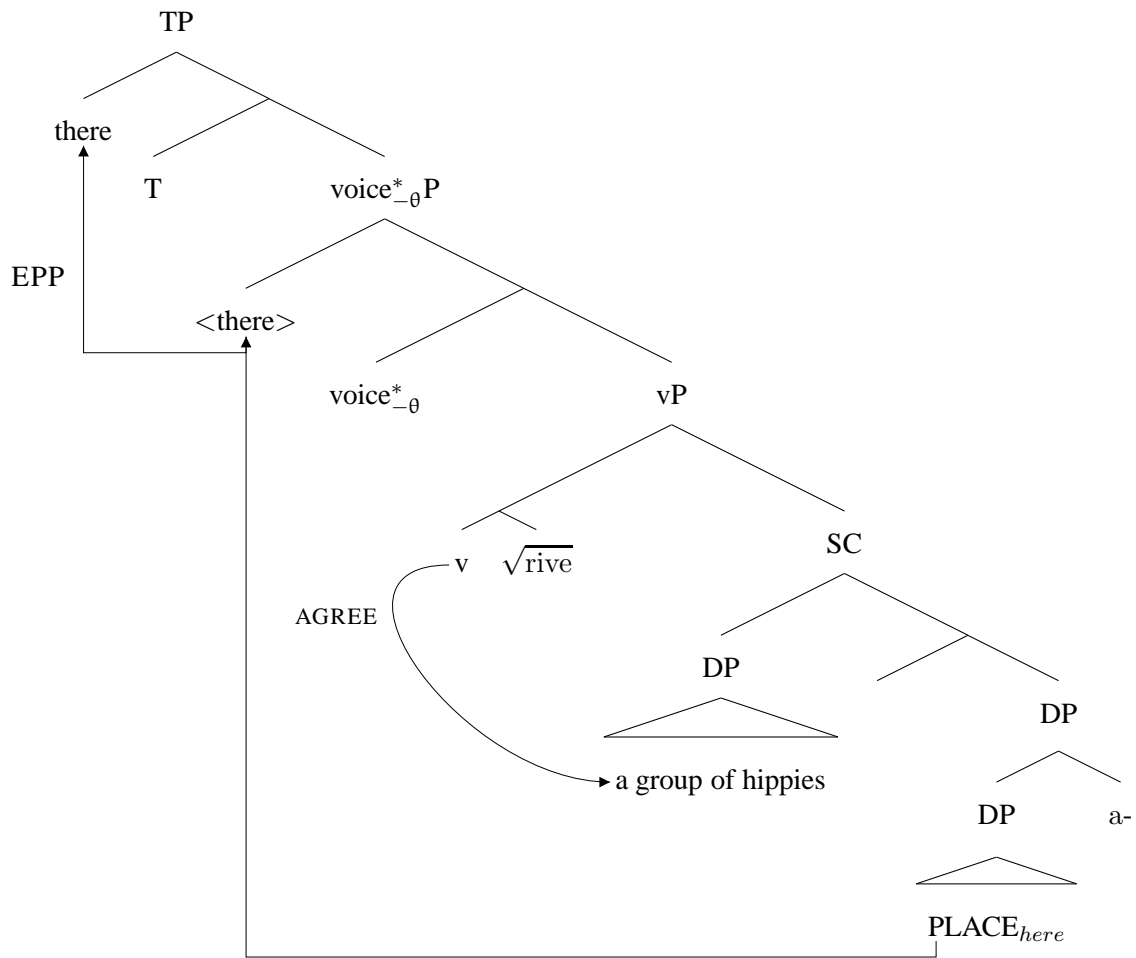
If *v* does not agree with the direct object, on the other hand, the non-phase-ending head *voice*$^-$ is merged, T^0 agrees with the direct object, and A-movement of the direct

object is necessary for EPP. This derivation was shown in (107) and is repeated below as (140).

(140)   Some hippies arrived.

The tree diagram:

- TP
  - DP (a vase) — with EPP arrow
  - T — with AGREE arrow pointing to *some hippies*
  - voice⁻P
    - voice⁻
    - vP
      - v √rive
      - SC
        - DP (some hippies)
        - DP
          - DP (PLACE$_{here}$)
          - a-

The approach to *there*-insertion that I take follows recent work with respect to the low, vP-internal merge position of *there* (Deal 2009; Alexiadou and Schäfer 2009; Richards 2007). But on the analysis I propose, *there* is first merged as a modifier of PLACE; it subsequently raises to satisfy the requirement that voice$^{*}_{-\theta}$ have an internally merged, non-thematic specifier.

3.4.3.1 A contentful *there*

In merging *there* low in the vP, my analysis is similar to recent analyses such as Deal (2009), Alexiadou and Schäfer (2009), and Richards (2007). These analyses continue the long tradition of analyzing *there* as a content-less expletive, merged when a particular syntactic position is not filled. In contrast, my analysis follows approaches to *there* in which this element is not semantically empty. The notion that *there* must have some content was made pointedly in Lasnik (1995): "If *there* is purely a pleonastic element, without semantic properties, it is not clear that a selectional restriction could be stated" (Lasnik, 1995: 624). My analysis builds on a tradition stemming from Katz and Postal (1964) through Freeze (1992), Hoekstra and Mulder (1990), and Kayne (2004, 2005) in hypothesizing that a locative or deictic element is required for *there* to be merged. In the following paragraphs, I discuss the merge position and semantic content of *there*.

Recent analyses starting with Richards (2007) and continuing through Deal (2009) argue against the standard analysis from Chomsky that *there* is merged high. Like Deal (2009), the *there* in my analysis is externally merged to a vP-internal position. Deal (2009) (as well as Alexiadou and Schäfer 2009) makes purely syntactic arguments about the merge position of *there*, arguments based on complementary distribution: *there* is there only when a non-thematic specifier position is open; when *there* is not there, it is because something else is occupying this position. For example, on Deal's analysis, "if an argument (nominal or eventive) must be projected in Spec,vP, *there* cannot be inserted. Otherwise, it is inserted freely into this position" (Deal, 2009: 298). And most of the time, something *is* occupying this position: ei-

ther a transitive direct object or (on Deal's analysis of causatives), an event variable; in the case of roots like *hang*, little-*v* does not project an external argument position.

On Deal's (2009) analysis, the external merge position of *there* is Spec,vP (using a Kratzerian voice system as I have been using here). Change of state unaccusatives like *break* do not allow *there*-insertion on this analysis because Spec,vP contains an event variable. Other unaccusatives, like *arrive*, allow *there* because they are selected for by a little-*v* (Deal's v⌣) that allows a non-thematic specifier. Whenever the derivation has the type of little-*v* that allows a non-thematic specifier (v⌣), *there*-insertion is allowed.

(141)   Trees from Deal (2009: 299)
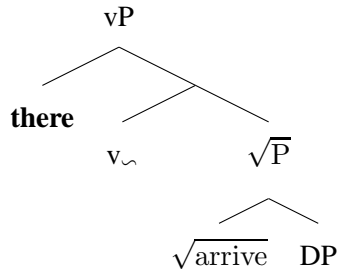
  A.   vP for *arrive*   B.   vP for *break*
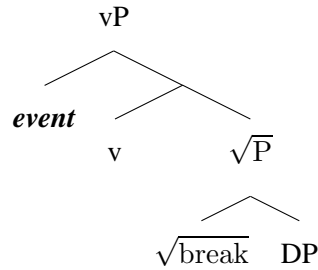
Roots like *break*, which can undergo the causative/inchoative alternation, have a similar structure on Deal's analysis. But in this case, Spec,vP is filled by an event variable. In having the Spec,vP of causatives filled with a silent element, this analysis is reminiscent of Kayne's (2010) analysis of causatives, where Spec,vP is filled by a silent causer.

In (141)A–B, little-*v* does double-duty in that it serves to categorize the root and introduce a (sometimes non-thematic) argument to its specifier. Insertion of *there* to spec,vP serves as the elsewhere condition: if this position is not filled with a transitive direct object or a causative event variable, we can have *there*. In sum, the differing behavior with respect to *arrive*-type vs. *break*-type verbs and *there*-insertion comes from complementary distribution of the event variable and *there*: both compete for spec,vP.

Alexiadou and Schäfer (2009) propose an analysis that is similar to that of Deal (2009), although they are critical of the non-standard positioning of the event variable in spec,vP in Deal's analysis of causatives. Otherwise, their analysis is similar to Deal's in that *there* comes about as a kind of elsewhere case—it is possible only when the Spec,vP position is not filled. On their analysis, the spec,vP for change of state verbs is filled by the theme, thus blocking *there* insertion. For *arrive*-type verbs, the theme is merged lower, in a Result projection, and so *there*-insertion is not blocked, since spec,vP is open. Alexiadou and Schäfer (2009) do not provide trees, but the ones in (142) follow the prose description of their analysis.

(142)   Trees along the lines of Alexiadou and Schäfer (2009)

  A.   *there*-insertion vP   B.   change of state vP
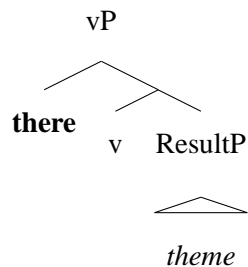
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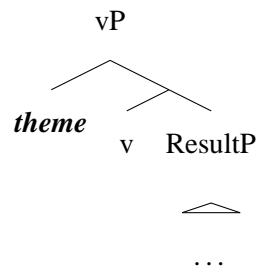
In Alexiadou and Schäfer's analysis, change of location roots like *arrive* allow *there*-insertion because the direct object in these structures is not merged in spec,vP but in a lower position, in a ResultP. As with Deal's analysis, the analysis in Alexiadou and Schäfer (2009) is purely syntactic: *there* and the change of state theme are in complementary distribution—they both compete for spec,vP. The only difference between the two analyses is what competes with *there* for spec,vP. For Deal (2009), an event variable (for change of state vPs) competes with *there*; for Alexiadou and Schäfer (2009), the direct object (for change of state vPs) competes with *there*.

These analyses, in the tradition of Chomsky (1995, 2000, 2001), leave open the question of why *there* of all lexical items serves this role. This tradition analyzes *there* as an "LF affix" (Chomsky 1993: 32;Chomsky 1995: 200), a semantically empty element that simply satisfies EPP. As Lasnik (1995) points out, the idea of selection for a semantically vacuous element is problematic. Chomsky states that *there* has some "inadequacies" (Chomsky, 1993: 33), a point that Lasnik (1995) discusses in detail, concluding in Lasnik (1999: 131) that *there* does not have any "relevant inadequacies" aside from being affixal.

The tradition beginning with Katz and Postal (1964) shares the view that *there* is not "inadequate," and this tradition pursues the idea that *there* is essentially locative. This type of analysis makes headway on the question of why *there*, an element which can serve as a PP in sentences like (143), is the lexical item that English and other languages use in existential sentences (as discussed in Freeze (1992)).

(143)   *there* can serve as a PP

     a.   Dawn put the tofu right <u>in the refrigerator</u>.

b.   Dawn put the tofu right <u>there</u>.

Kayne (2010a) pushes this line of analysis further, arguing that *there* is not always locative, as we see in examples like (144). Kayne (2010a: 99) argues that *there* is best analyzed as a deictic, defined as an element, like a demonstrative, involving "reference to or orientation with respect to the speaker."

(144)   *there* as a deictic element   (Kayne, 2010a: 97, 98)

a.   We spoke thereof.

b.   That there car ain't no good.

I would like to argue that the tradition from Katz and Postal (1964), Lasnik (1995), through Kayne (2004, 2005, 2010a) is right in arguing for a contentful *there* and for a tight relationship between *there* and the element that it merges with. In the discussion here and below, I discuss *there* as always modifying the DP PLACE, a locative element. But this line of analysis could be extended to the types of cases that Kayne talks about, cases in which *there* is analyzed more generally as a deictic element, one that can modify either PLACE or THING, as we saw in (144).

Note that my analysis differs from all these analyses in that *there* is an adjunct; the only two arguments in a *there* sentence on my analysis are the pivot and PLACE. In many of the analyses mentioned above, the selectional relationship is between *there* and the pivot (called the "associate" in this literature), and not between *there* and PLACE. This aspect of the analysis also differs from that of Freeze (1992), who argues that all locative and existential (and possessive) sentences are derived from the same source, and that in existential locative sentences like (145), the PP *in the*

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refrigerator is an argument. I leave for further research the question of whether sentences like these are always derived from the same underlying structure.

(145) a. There is some tofu in the refrigerator.

b. Some tofu is in the refrigerator.

Another way in which my analysis differs from previous ones is in the interpretation of the DP pivot. As we have seen, the approach taken here is one in which thematic roles are interpreted configurationally, and little-*v* is strictly a categorizing head that introduces an event variable. The specifier of this projection does not have an interpretation, and my analysis not make use of it. Recall that the DP direct object of an unmodified (activity) little-*v* is interpreted as undergoing a change of state, where the root specifies this end state.

(146) DP complement of (activity) *v*: change of state
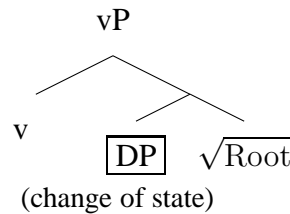
The direct object DP in a SC is interpreted similarly, but the change of state here is of a specific sort: when PLACE is the other constituent in the SC, the change of state is simply from not being in existence to being in existence. And coming into existence is with respect to PLACE.

(147) DP in a SC with PLACE: come into existence

vP
v   SC
DP   PLACE
(come into existence)
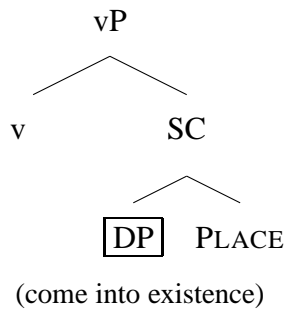
In a structure like (147), the location PLACE can be further modified, by *there*, or by a PP, for example.

(148)   Further modification of coming-into-existence DP

vP
v   SC
DP   PLACE   there   in the refrigerator
(come into existence)
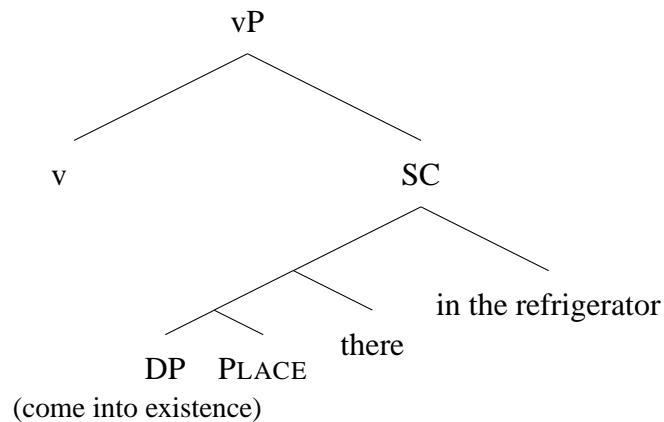
Recall that on this analysis, there is a predication between the pivot and PLACE. The asymmetric relationship between the pivot and PLACE allows existential closure to occur at the vP, satisfying a specific set of requirements that I propose in Chapter 4 for the introduction of new discourse referents.

3.4.3.2 Non-presentational, non-existential *there* sentences

This section discusses the possibility of *there*-insertion in sentences without SCs. Recall that the derivation I have proposed for *there*-insertion sentences involves a SC in which the predicate in the SC is PLACE. The locative (deictic) element *there* in these sentences selects for PLACE. In this approach, nothing rules out the possibility that the constituent [PLACE (*there*)] can be merged in other positions—for example as an argument in a configuration that is not a SC. We will see that this prediction is borne out with vPs containing roots such as *emerge* and *form*. I will argue that when these vPs do not have the SC (complex complement) structure, they do not have a predication in the same way that complex complement structures do and that this has consequences at the interface with information structure.

My analysis so far also splits unaccusative vPs into two categories, and it shares with analyses such as Deal (2009) the stipulation that only a strong voice head requiring a non-thematic specifier (voice$^*_{-\theta}$) can select for the vP in *there*-insertion sentences. But the distribution of *there* in my analysis is not as limited as in these analyses. I would like to propose that *there* is possible whenever a PLACE constituent is possible.[8] My analysis predicts that the simple complement structure, involving a change of state root, can have *there*-insertion. In these cases *there* can raise out of vP if voice$^*_{-\theta}$ selects for the vP.

Recall that the simple complement structure allows for the causative/inchoative alternation. This flexibility predicts the existence of a class of roots that can undergo

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[8]This proposal does not rule out the possibility that [*there* PLACE] could occur in transitive sentences—but in this case, *there* would not be able to move out of the vP, because it cannot move to the specifier of agentive Voice.

both the causative/inchoative alternation and *there*-insertion. This is the case with roots such as *form* and *collect*, as shown in (149)–(151).

(149)   *form*

      a.   There formed a pile of leaves (outside the doorstep).

      b.   A pile of leaves formed (there).

      c.   Jamie formed a pile of leaves (neatly) (there).

(150)   *gather*

      a.   There gathered a group of hippies (at the fountain).

      b.   A group of hippies gathered (there).

      c.   Dawn gathered a group of hippies (together) (there).

(151)   *collect*

      a.   There collected a puddle of candle wax.

      b.   A puddle of candle wax collected (there).

      c.   Dawn collected a puddle of candle wax (there).

What do the vPs in (149)–(151) mean? These vPs all denote the coming into existence of the direct object (e.g., the puddle of candle wax) with respect to a location.

Although the sentences in (149a), (150a), and (151a) involve *there*-insertion, I do not analyze them as having the complex complement structure, as necessarily involving a SC with a DP (e.g. *a pile of leaves*) in a predication with PLACE. One reason for this is because of the distribution of *re-* in sentences like these, as shown in (152).

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(152)   *re-* with *form, gather, collect*

     a.   A pile of leaves re-formed (as soon as I brushed one away).

     b.   A group of hippies re-gathered (after a short folksong).

     c.   A puddle of wax re-collected (after a few hours).

We have seen in §3.2.1 that *re-* can be used as a structural diagnostic. It must attach to a DP, and it cannot attach to a branching structure such as a SC. If *re-* is acceptable with *there*-insertion sentences, then it must be that the sentences in (152) do not have the SC structure.

In other words, sentences with *form, gather*, etc. are structurally ambiguous. The ambiguity is between the simple complement structure (153) and the complex complement structure (154). The simple complement structure has further DP adjunction, as shown in the tree for sentence (149b) in (153) below.

(153)   Simple complement structure
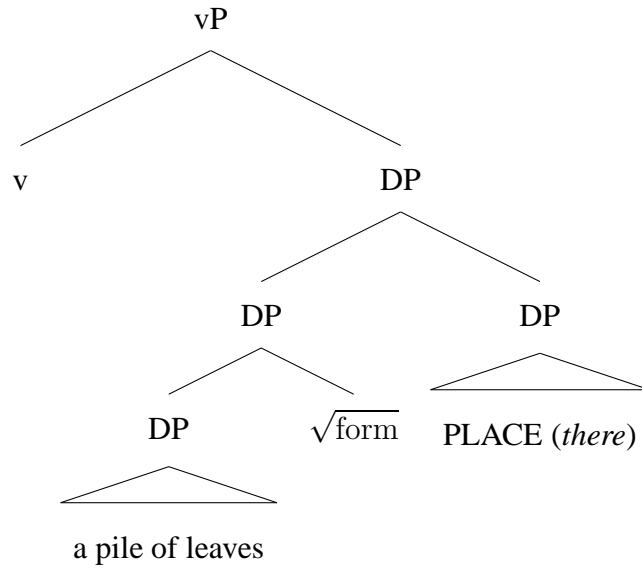
A pile of leaves formed ⇝ ✓ *A pile of leaves re-formed*

vP
├── v
└── DP
    ├── DP
    │   ├── DP
    │   │   └── a pile of leaves
    │   └── √form
    └── DP
        └── PLACE (*there*)

(154)   Complex complement structure

A pile of leaves formed ⇝ *A pile of leaves re-formed*

vP
├── v √form
└── SC
    ├── DP
    │   └── a pile of leaves
    └── DP
        └── PLACE*here*

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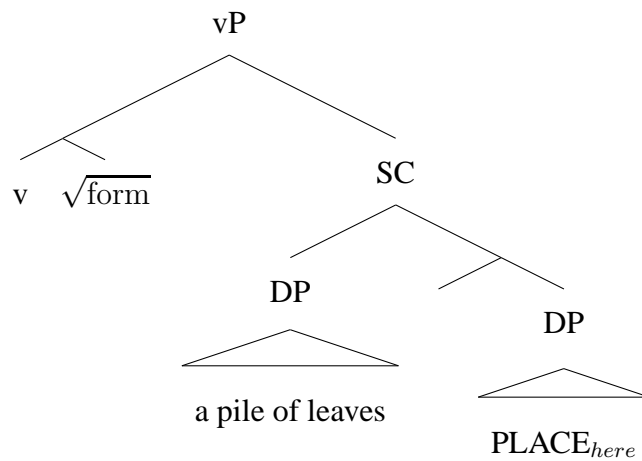
The structure in (153) leaves open the possibility of voice$^*_{+\theta}$ and an external argument being merged above, just as we saw in derivations with roots like *break*, for example. But recall that in the *break* analysis, the change of state of the DP is denoted by the root, e.g. *broken*. In (153), by contrast, the DP *a pile of leaves* is not interpreted as *formed*. The interpretation of the DP in (153) is a special case of change of state—that of coming into existence with respect to [*there* PLACE].

One way to disambiguate the structures in (153) and (154) is with *re-*, since *re-* is only possible with the simple complement structure. Another way is with the introduction of new discourse referents. I have been arguing in this chapter that one way to introduce new discourse referents is by means of existential closure at vP, which is made available by a predication. I have also argued that the simple complement structure, when it is intransitive, does not involve a predication. But the complex complement structure does have a predication, in the form of the SC. I propose that when a new discourse referent is introduced with *form*, the sentence will have the SC structure, as in (154).

It appears that a root like *arrive* differs from *form* in that it cannot occur in a structurally ambiguous vP, nor can discourse referent introducing "particle" verb constructions like *come in* or *pull up*. Because sentences with these roots are all unacceptable or highly questionable with *re-* prefixation, as shown in (155), I analyze them as having the complex complement (SC) structure.

(155)   a.   *The shipment of patchouli re-arrived.

        b.   *The group of hippies re-came in.

        c.   *The colorful van re-pulled up.

        d.   ??After much thought, I re-arrived at the same conclusion.

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I have been arguing here that *re-* diagnoses the simple complement structure, and a new discourse referent diagnoses the SC structure. The facts based on vPs with *form* give the impression *there* only occurs with the SC structure: we do not see any examples of **there re-formed*, despite the fact that *there formed* is perfectly acceptable. This suggests that [*there* PLACE] *can* occur in the simple complement structure, though the type of voice that is merged above does not allow *there* as a subject. Why might this be? In the simple complement structure, *there* is merged as a modifier of an adjunct, not the modifier of an argument. This may be why *a pile of leaves*, in the simple complement structure, can raise to spec,TP, but the *there* of [*there* PLACE] must stay within the vP.

3.5   Summary: Looking toward the interfaces

I have argued in this chapter that one way to introduce a discourse referent involves existential closure at the vP level (Diesing, 1992), which is made possible by a predication. In the case of intransitive sentences, this predication is effected, syntactically, by a SC in which the predicate of the SC is the silent DP PLACE. As I discuss further in Chapter 4, this means of introducing a new discourse referent is available only with unaccusative sentences that have the complex complement structure. I have argued that between the simple complement structure and the complex complement structure, only the complex complement structure has the predication that makes ∃C available.

The typology of structures that we have been discussing leads to some groupings among transitive and intransitive sentences that may at first seem surprising. For example, at the interface with information structure—specifically, the capacity to

introduce new discourse referents—this analysis groups together transitive direct objects with direct objects in only one unaccusative structure, the complex complement (SC) structure. Syntactically, this grouping is somewhat surprising, since transitive structures and intransitive complex complement structures involve different voice heads: transitive structures have *voice**, and the intransitive complex complement structure has *voice*$^-$. This tells us that the value of *voice* in a derivation plays only an indirect role satisfying the requirements for new discourse referents. In Chapter 4, I will discuss how, in information structural terms, both transitive and complex complement configurations allow for a theme-rheme interpretation.

When we turn to *there*-insertion sentences, the syntactic typology is also interesting. On the analysis proposed here, both transitives and *there*-insertion sentences have *voice**. Does this mean that *there*-insertion sentences should, syntactically, be considered transitive? This is a question that I will set aside. But we will see in Chapter 5 that the *voice** shared by transitive and *there*-insertion sentences groups together these two types of sentences in a concrete way. At interface with phonology, both types of sentences have two domains for accent assignment. I will argue in Chapter 5 that this interface effect can be seen as a consequence the strong phase property of *voice**.

CHAPTER 4

The Information-Structural Consequences of

Unaccusativity

4.0   Introduction

This chapter presents the results of a corpus experiment that tests the hypothesis that when a discourse referent (Karttunen, 1976) is introduced in a sentence with an intransitive verb, the sentence will be unaccusative rather than unergative.[1] Previous corpus work (e.g., Prince, 1981) has shown that new discourse referents tend to be introduced in non-subject positions, for example as direct objects. We saw in Chapter 2 that unaccusative "subjects" pattern with transitive direct objects with respect to a variety of syntactic diagnostics (e.g., *ne*-cliticization in Italian); one way to put the broad question of this chapter, then, is as follows: Since derived subjects have some

[1]See Cortés (1997) for an early argument along similar lines.

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of the *syntactic* properties of transitive direct objects, do these arguments also have the *information structural* properties of transitive direct objects?

The theoretical work presented in Chapter 3 and discussed further in this chapter predicts an additional distinction such that only a subtype of unaccusative sentences will establish discourse referents by the same means as transitive sentences. I have hypothesized that transitive sentences are able to establish discourse referents by satisfying two requirements, as given in (156), where condition (ii) can occur only when condition (i) is satisfied.

(156)   Transitive direct objects: New discourse referent establishment

      i.   Asymmetrical relationship (predication) between two phrases

      ii. Existential closure ($\exists C$) at the vP

I have also argued that between our two types of unaccusative sentences, only those with the complex complement (SC/PredP) structure satisfy condition (i) in (156). Although unaccusative sentences with the simple complement structure (e.g., *a vase broke*) may be able to establish discourse referents, they must utilize different syntactic/semantic means; they do not satisfy the conditions in (156), the conditions that I hypothesize are satisfied by transitive sentences and complex complement unaccusatives.

We turn now to my predictions for the corpus experiment. I predict that the means given in (156) will be the means by which speakers establish new discourse referents in intransitive sentences.[2] The examples given in (157)–(159) illustrate the predictions: unergative sentences like (157) and simple complement unaccusatives

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[2]The corpus experiment presented in this chapter started with the more simple prediction that a difference would be found between unaccusative and unergative sentences (Cortés, 1997). The

like (158) are predicted not to occur in the corpus as introducing new discourse refer-ents; when a new discourse referent is introduced in an intransitive sentence, the sen-tence is predicted be the complex complement subtype of unaccusative, as in (159). In these examples, the symbol '⤳' indicates the establishment of a discourse refer-ent; the symbol '#' indicates infelicity; the checkmark symbol is used to emphasize acceptability.

(157)   Prediction 1:

         The argument in an unergative sentence does not establish a discourse ref-erent

         [A hippie]_New smoked ⤳ #Discourse Referent

(158)   Prediction 2:

         The argument in an unaccusative sentence with the simple complement structure does not establish a discourse referent

         [A wine glass]_New broke. ⤳ #Discourse Referent

(159)   Prediction 3:

         The argument in an unaccusative sentence with the complex complement structure can establish a discourse referent

         [A hippie]_New arrived. ⤳ ✓Discourse Referent

I would like to emphasize again that sentences like (157) and (158) are perfectly well-formed in English. They may also be able to introduce discourse referents; but however they might do so, it is not by the same means as transitive and complex

theoretical work discussed in previous chapters led to the refinement of this prediction to the current one: that only a subset of unaccusatives establish discourse referents.

complement sentences, by satisfying the conditions in (156). As will be discussed further below, the relevant notion of *new* here is from Prince (1992), that of being "brand new"—i.e., both "discourse new" (not previously uttered) and "hearer new" (assumed by the speaker to be unfamiliar to the listener).

Syntactic structure is predicted to play a role in information structure in the following ways: the vP-internal merge position of unaccusative arguments allows unaccusative sentences to introduce new referents to the discourse, in the same way that the vP-internal merge position of transitive direct objects allows transitive direct objects to introduce new discourse referents. In contrast, the vP-*external* merge position of the argument in an unergative sentence means that these sentences are not able to introduce discourse referents to the discourse, just as the external arguments in transitive sentences do not introduce new discourse referents. Next, these differences are predicted to be found within unaccusative sentences. Although the single argument for both types of unaccusative sentences is merged vP-internally, only complex complement unaccusatives have the asymmetric relationship between two XPs that allows for a predication and therefore existential closure at the vP. In contrast, the single argument in the simple complement structure does not allow for existential closure, despite the fact that it is merged vP-internally. These observations are illustrated schematically in (160)–(161); I propose that $\exists$C can occur at the vP only in the configuration shown in (160).

(160)   A hippie [$_{vP}$ arrived [$_{SC}$ *<a hippie>* PLACE]]

(161)   A wine glass [$_{vP}$ broke *<a wine glass>*]

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The idea that new discourse referents must be introduced in a structure in which the verb c-commands the DP goes back to Guéron (1980), who argued that argued that presentational LFs require the "focus N" to be in the "scope" of (i.e., c-commanded by) the verb. The alternations within unaccusatives, as shown in (160)–(161), predict that an additional requirement obtains: the new discourse referent must be part of a predication. At the end of this chapter, I will discuss this requirement in light of Kuroda 1972's (1972) thetic-categorical distinction, discussed more recently by e.g., Ladusaw (1994), Lambrecht (2001), and Jäger (2001).

4.1 Theoretical Background

This section first provides a definition and discussion of the term *discourse referent*. It then presents the theoretical and experimental background that motivate the hypothesis that when a discourse referent is introduced in an intransitive sentence, that sentence will be unaccusative rather than unergative, and that in addition the sentence will have the complex complement unaccusative structure.

4.1.1 The notion of a discourse referent

The term 'discourse referent' goes back to the work of Karttunen (1976), who provides the following definition: "Let us say that the appearance of an indefinite noun phrase establishes a 'discourse referent' just in case it justifies the occurrence of a coreferential pronoun or a definite noun phrase later in the text" Karttunen (1976: 366). Although Karttunen's interest was in how discourse referents were established, much of his discussion focuses on the many ways in which the establishment of a dis-

course referent can be blocked. One example is negation, as we see in the comparison between (162) and (163).

(162)   Discourse referent established   (Karttunen, 1976: 366)

    a.   Bill saw <u>a unicorn</u>.

    b.   <u>The unicorn</u> had a gold mane.

(163)   No discourse referent established   (Karttunen, 1976: 366)

    a.   Bill didn't see <u>a unicorn</u>.

    b.   *<u>The unicorn</u> had a gold mane.

Karttunen also notes that generics do not establish discourse referents, as illustrated in (164).[3] Karttunen also gives examples of "short-term" discourse referents, such as those that are introduced in the scope of a modal verb and that can be subsequently referred to only in the scope of the same modality (165). The sentences in (164)–(165) are based on (Karttunen, 1976: 365,368,374).

(164)   <u>A lion</u> is a mighty hunter.

    . . . #<u>He</u> is hungry.

(165)   You must write <u>a letter</u> to your parents.

    a.   . . . #They are expecting <u>the letter</u>/<u>it</u>.

    b.   . . . ✓You <u>should</u> send <u>it</u> soon.

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[3]As will be discussed in Chapter 5, generic sentences also have interesting prosodic properties, as discussed by Faber (1987).

Finally, Karttunen discusses what has become a well-known phenomenon: that of indefinites in sentences that contain quantifiers or "quantifier-like" elements. He discusses sentences like (166), which has three interpretations, as shown in (166a)–(166c).

(166)   Bill intends to visit a museum every day.   (Karttunen, 1976: 379–380)

    a.   'There is a certain museum that Bill intends to visit every day.'

    b.   'Bill intends that there be some museum he visit every day.'

    c.   'Bill intends to do a museum visit every day.'

As Karttunen points out, only the interpretation paraphrased in (166a) establishes a discourse referent for *a museum*. In this interpretation, the indefinite is said to take scope over the other scope-taking elements in the sentence, as shown in (167).

(167)   LFs from (Karttunen, 1976: 380)

    a. $\exists x[$ museum(x) . intend (Bill, (every day)(visit(Bill, x)))]

    b.   intend (Bill, $\exists x[$ museum(x) . (every day)(visit(Bill, x))])

    c.   intend (Bill, (every day) $(\exists x)[$ museum(x) . (visit(Bill, x))])

Only in (167a) is the indefinite above all other scope-taking elements, and only in this interpretation is a discourse referent possible, as shown in (168) (my example, not Karttunen's). In (168), we see that the life of the discourse referent extends beyond the sentence.

(168)   Bill intends to visit <u>a museum</u> every day.

    <u>The museum</u> is at 53rd Street, so he will have a long commute.

4.1.2 Files and filecards

Heim (1982, 1983 [2002]) builds on Karttunen's notion of discourse referents by using a metaphor involving files and filecards. On this metaphor, conversations can be thought of as files that store information about a conversation, and in the file is a collection of filecards that are continually updated as the conversation progresses (Heim, 1983 [2002]: 226). The file and filecards can be thought of as part the Common Ground (CG), in this model of information exchange (Stalnaker 1974; Karttunen 1974; Lewis 1979; Stalnaker 2002; see also Krifka 2007). The filecard metaphor is useful because it separates the notion of the creation of a new filecard (the establishment of a discourse referent) from that of adding information to an existing filecard.

Heim proposes that every indefinite NP comes with an indexed variable, and when a listener encounters an indefinite, the listener creates a new file card with the index of the NP's variable.

(169)   **File-keeping instruction**: For every indefinite, start a new card. For every definite, update an old card. (Heim 1982: 276; Heim 1983 [2002]: 227)

The examples in (170) below, based loosely on Heim (1983 [2002]: 226ff), illustrate how file-keeping works in Heim's system. In this illustration, we will assume that the speaker and the listener are already familiar with the referent for *Dawn*, so that a new filecard is not created when this name is uttered—in other words, a filecard for *Dawn* already exists in the current file. When a listener hears (170), the listener writes some information (indicated by boldface) on the existing card, as illustrated in (171). The listener creates a new filecard for the referent introduced as a direct object

(*a candle*) and writes some information on it. In this example, new information is shown in boldface font.

(170) $[Dawn]_{x1}$ lit [a purple candle]$_{x2}$.

(171)   **F$_1$:**

Filecard: x_1
· Dawn
· is a hippie
· has long hair
· **lit x$_2$**

Filecard: x$_2$
· **is a candle**
· **is purple**
· **lit by lit x$_1$**

The discourse can proceed with another sentence, and if the sentence contains a definite NP as in (172), the current filecards are transferred to another File, F$_2$, and they are updated. We can think of the process of updating filecards and putting them in a new file as updating the Common Ground (173).

(172)   The candle burned for ten minutes.

(173)   **F$_1$:**

Filecard: x_1
· Dawn
· is a hippie
· has long hair
· lit x$_2$

Filecard: x_2
· is a candle
· is purple
· lit by lit x$_1$
· **burned for 10 min.**

As is well-known, the filecard approach was influential in analyses of "donkey" sentences, though this approach has been superseded by others. Although I ultimately follow an approach in which indefinites do not introduce variables but, instead, evoke alternatives, as in Alternative Semantics (Kratzer and Shimoyama, 2002), Heim's filecard metaphor is useful for the question of what role argument structure and predication have in the creation of new discourse referents. According to Heim, syntactic argument structure plays no role at all. Prince (1981: 235) uses a metaphor similar to the filecard metaphor (citing Webber 1978) and conceives of discourse entities as "hooks on which to hang attributes"; Prince adds that "all discourse entities in a discourse-model are represented by NPs in a text, though not all NPs in a text represent discourse entities."

In this early work on establishing discourse referents (as well as on donkey sentences), much of the focus was on indefinite DPs. But it should be noted that indefinite DPs are not the only linguistic means of establishing a discourse referent, and in fact definite DPs can also introduce discourse referents. For these kinds of discourse referents, the referring expression may contain a definite determiner, but—to use the filecard metaphor—the discourse referent does not yet have a filecard. For this reason, the experiment described here uses a corpus in which *information status* rather than the form of DPs was coded. The types of definite descriptions that often introduce new discourse referents have been explored from a formal semantic perspective by Poesio (1994), and from a pragmatic perspective by Birner (1996). Definite descriptions of this type have been called "bridging definites" (Clark, 1977), "associative definites" (Hawkins, 1978), "inferrables" (Prince, 1981), and are among

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what Poesio (1994) calls "weak definites."[4] Poesio (1994) illustrates this class with the sentence in (174).

(174)   We went to a wedding last Sunday. <u>The bride</u> wore red. (Poesio, 1994: 14)

The bride is considered inferrable here because brides are strongly associated with weddings.

Another category of inferrable is that in which there is a part/whole relationship between a given element and the new definite. This type of inferrable is illustrated in (175), where *cushion* and *sofa* are in a part/whole relationship.[5]

(175)   She sat down on a sofa and patted <u>the cushion</u> beside her.[6]

Barker (1992, 2000) gives an account of when these kinds of inferences are felicitous.

Prince (1981) adds an additional term for a type of DP that commonly introduces discourse referents. Prince (1981) calls these entities *Brand-new Anchored*. This type of DP is indefinite but contains a (sometimes reduced) relative clause or a possessive, as in (176).

(176)   a.   <u>A rich guy I know</u> bought a Cadillac.   (Prince, 1981: 237)

         b.   <u>A friend of mine</u> makes granola.

Although a fuller discussion of these types of indefinites is beyond the scope of the current work, it is clear that these examples contain a pronominal element that is given in the common ground; *I* in (176a) and *mine* in (176b). This element serves

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[4]Citations for Clark (1977) and Hawkins (1978) are from Poesio (1994: 14).

[5]This sentence was inspired by a similar example in Birner and Ward (2009: 1170).

[6]Neels, Betty. 2001. *Always and Forever*. Toronto, CA: Harlequin.

as the "anchor", and its presence may allow for ways of introducing new discourse referents that are different from the ones that I propose in (156).

Prince also makes the interesting observation that examples like (176b) require the object of the preposition to be definite or to be modified by a relative clause, as shown in the contrasts in (177), inspired by Prince's (1981: 246) sentences.

(177)   a.   *<u>A friend of **a guy**</u> bought a Cadillac.

   b.   <u>A friend of **a guy I know**</u> bought a Cadillac.

   c.   <u>A friend of **mine**</u> bought a Cadillac.

4.1.3   Guéron (1980) and the LF of presentation

Heim's filecard metaphor allows us to talk about the difference between the act of creating a new filecard and the act of adding information to an existing filecard. The notion of adding to an existing filecard is related to topicality, where the existing filecard can be seen as a *topic* (usually old information), and the information added to the card can be seen as a *comment* (usually new information). The creation of a new filecard can be thought of as *presentation*. Although topics are generally considered to be old information (existing filecards, in the current metaphor), many have noted that topics do not always have the information status OLD. Reinhart (1981) was the among the first to make this case, and Krifka (2007) emphasizes the point with the sentence in (178), topic constituent introduces a new entity into the discourse.

(178)   [A good friend of mine]$_{\text{Topic}}$ [married Britney Spears last year]$_{\text{Comment}}$

   (Krifka, 2007: 42)

In the filecard metaphor, sentence (178) forces the listener to create a new filecard and then write something on that filecard. However, it is worth noting that in Prince's (1981) typology, the subject [a good friend of mine] would be classed as "Brand New *Anchored*", since *of mine* refers to the speaker, who is given in the common ground. To illustrate the importance of this anchoring, notice that sentences in (179) have a very different status from (178).

(179)   a.   [A good friend]$_{\text{Topic}}$ [married Britney Spears last year]$_{\text{Comment}}$

           b. ??[A backup dancer]$_{\text{Topic}}$ [married Britney Spears last year]$_{\text{Comment}}$

The proper name 'Britney Spears' is also, presumably, part of the common ground (Prince 1992: 301;Prince 1981: 243). Despite exceptions like Krifka's, the descriptive generalization holds that most topics are old/given, and that in discourse, the creation of a new filecard and the adding of information to an existing filecard are separate acts. The idea that the two discourse acts of creating vs. adding to new filecards has been explored deeply in the functionalist-oriented literature. Lambrecht (1994), for example, instantiates this generalization as the "Principle of the separation of the reference and role" (PSRR):

(180)   Lambrecht's Principle of the Separation of the Reference and Role

        "I will call the grammatical principle whereby the lexical representation of a topic referent takes place separately from the designation of the referent's role as an argument in a proposition as the PRINCIPLE OF THE SEPARATION OF REFERENCE AND ROLE (PSRR) for topic expressions." (Lambrecht, 1994: 185)

Lambrecht (1994: 185) says that we can think of this generalization less formally as the maxim, "Do not introduce a referent and talk about it in the same clause." Lambrecht then talks about special presentational predicates which do the job of discourse referent introduction. Although Lambrecht does not discuss it, one way in which presentational sentences can talk about a referent in the course of introducing the referent is through adjectival modification of the new entity. For example, in (181), with the uncontroversially presentational predicate *come in*, the sentence in (181b) is not degraded in relation to (181a), even though (181b) provides more information for the new filecard that the listener creates.

(181)   a.   A guy came in.

          b.   A long-haired guy came in.

What matters for the PSRR, then, is what does and does not count as a predication.

Guéron (1980) discusses the distinction between filecard creation and adding to an existing filecard in terms of presentational and predicational Logical Forms (LFs). Although Guéron (1980) is concerned with PP extraposition, this paper provides rich insights on the syntax and interpretation of new discourse referents. The central argument of the paper is that some sentences with unacceptable PP extraposition are syntactically well-formed but semantically uninterpretable. PP extraposition is illustrated in (182) and (183), where extraposition of *with green eyes* is acceptable from sentence (182a), but not acceptable from sentence (183a), as shown in (183b).

(182)   PP extraposition is acceptable   (Guéron, 1980: 637)

          a.   A man [with green eyes] appeared.   *no extraposition*

b. A man appeared [with green eyes]. *PP has been extraposed*

(183) PP extraposition is not acceptable (Guéron, 1980: 637)

    a. A man [with green eyes] hit Bill. *no extraposition*

    b. *A man hit Bill [with green eyes]. *PP has been extraposed*

For Guéron, there are two main types of LFs, which she defines structurally: an LF associated with predication, in which the surface structure and LF are the same; and an LF associated with presentation, in which the surface structure and LF are not the same. In presentational LFs, the verb c-commands ("scopes over" in Guéron's terminology) the subject. These distinctions are summarized in Table 4.1, where 'SS' refers to surface structure.

	Predication	**Presentation**
interpretation	subject presupposed; VP describes property of subject	subject not presupposed; VP denotes appearance of subject in discourse
SS and LF	same	different: verb moves at LF
representation (at LF)		

Table 4.1: Predication sentences vs. Presentation sentences (Guéron, 1980: 651; 653)

Using the distinctions shown in Table 4.1, Guéron argues that PP extraposition is acceptable when the two conditions in (184) are met.

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(184)   Conditions on interpretable PP extraposition (Guéron, 1980)

    a.   The verb c-commands the subject at LF

    b.   The configuration VS (verb-subject) is interpretable at LF

Syntactic movement at LF freely generates the configuration in which the verb c-commands the subject; this is condition (184a). But condition (184b) does not always hold. Guéron argues that this is because the presentational configuration, VS, is not always interpretable.

When is the configuration VS interpretable? Condition (184b) can be satisfied in two cases. The first case is when the verb denotes "coming on the scene," as with *appear*, for instance. In addition, many other verbs can become "pragmatic synonyms" with *appear* through a process of pragmatic emptying of semantic content (Guéron, 1980: 653). Guéron does not say when this "pragmatic emptying" can take place: in fact, she writes that it is "not possible to state lexical constraints on PP Extraposition" (Guéron, 1980: 663).

There are two insights from Guéron (1980) that are precursors to the current analysis. The first insight involves the structural configuration VS. In the current analysis, this translates into the requirement that new discourse referents must be direct objects, though not at LF, as in Guéron's framework, but in the first phase of the syntax. I have been arguing that this requirement for new discourse referents is not sufficient, however, since I am pursuing the hypothesis that new discourse referents are not established in the simple direct object configuration (by e.g. *break*-type unaccusatives).

The second insight from Guéron refines the notion of pragmatic or semantic "emptying" of content. In the presentational interpretation of a sentence like (185), Guéron would say that the verb *waltz* becomes contentless.

(185)   A foppish boy waltzed into the room.

On the analysis proposed here, *waltz* and all the other lexical items in this sentence remain fully contentful. I propose the syntactic structure that the root *waltz* occurs in is what allows this sentence to be presentational. Specifically, the root *waltz* can occur in the complex complement structure, the structure in which we have a SC/PredP complement to *v*, and in which one of the elements of the predication is silent PLACE (and the subject of the predication, in this case, is *a foppish boy*). According to this analysis, *waltz* does not "become" an existential verb, but it can occur in what is essentially an existential structure.

This view is different from that of Guéron, but it retains one of the fundamental insights from Guéron (1980): the predication of intransitive presentational sentences like (185) is not a predication involving *waltz*, but a predication involving the new discourse referent (*a foppish boy*), and a contextually-given location, as shown in (186).

(186)   A foppish boy waltzed into the room.

$$
\begin{array}{c}
\text{SC} \\
\diagdown \diagup \\
\text{DP} \qquad \text{DP}
\end{array}
$$

```
              SC
             /  \
           DP    \
          /  \    DP
     a foppish boy / \
                  PLACE_here
```
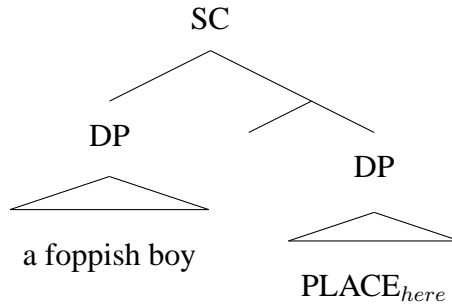
The fact that the main predication of the sentence is between the foppish boy and PLACE does indeed make it seem like *waltz* is semantically bleached. But *waltz* makes a contribution—it's just that *waltz* functions here more like an adjective, like *foppish*; *waltz* simply serves to modify the event of coming onto the scene. In other words, (185) might be paraphrased as (187).

(187)   There came into the room a waltzing foppish boy.

Put in terms of the filecard analogy, sentence (185) would involve the creation of a filecard as in (189).

(188)   [A foppish boy]$_{x1}$ waltzed into the room.

(189)   **F$_1$:**

New Filecard: x$_1$	Filecard: HERE
· **a boy**	· **x$_1$**
· **foppish**	
· **waltzing**	

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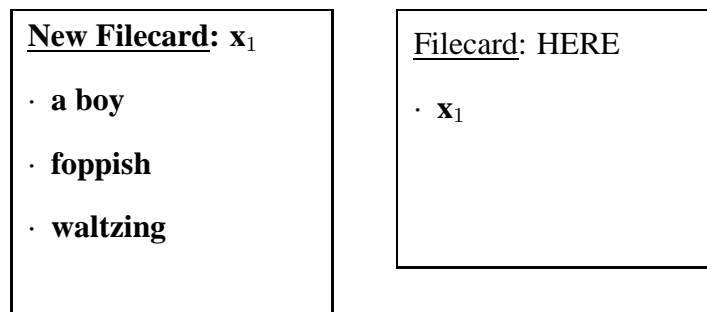
4.1.4 Word order and the "given-new contract"

It has long been observed in the more functionally-oriented literature that old or "given" information tends to precede new information. When this ordering of information does not occur, it tends to be under very specific pragmatic conditions (Halliday 1967b; Prince 1981; Birner and Ward 2009). Clark and Haviland (1977: 3) call this phenomenon of given-before-old the "given-new contract." A transitive sentence in English with a given subject and a new object fulfills this contract. What about intransitive sentences? If surface order were all that mattered for the introduction of discourse referents, then there would be no difference in the distribution of new discourse referents between unergative and unaccusative sentences, since in English (*there*-insertion aside) they all have the same surface word order: neither unergative nor unaccusative sentences would introduce new discourse referents.

Givenness is increasingly recognized as playing a role in syntactic operations. In her analysis of Milsark's 'outside verbals,' Deal (2009) suggests that a phasal Givenness head sits above vP/VoiceP and is the landing spot for the VP, resulting in word orders as seen in (190).

(190)   Movement to Spec,GivenP in Deal (2009: 316)

[GP There [GP [VP flew through the window] [VP [that shoe on the table] *v* <VP>]]

Kučerová (2007, 2010) has shown that Czech, among other free word-order languages, respects given-before-new word order, and that if the base-generated linear order of constituents does not respect given-new, syntactic movement takes place in order to derive given-new ordering. Kučerová draws on Heim's (1991) principle

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Maximize Presupposition (roughly: use the most informative presupposition) and hypothesizes that a givenness operator (*G-operator*) marks as given all elements that are structurally above it (Kučerová, 2010: 3). If a new element occurs before a given element, the derivation fails at the interface.

For example, Kučerová shows that when the verb in an unergative sentence in Czech, Serbo-Croatian or Russian is given, the verb moves to precede the subject, resulting in V-S order, shown schematically in (191) (Kučerová 2010: 6-8; Kučerová 2007: 43-45). In (191) and (192), the symbol '‖' indicates the position of the G-operator.

(191) V_{GIVEN} ‖ S_{NEW} $<V_{\text{GIVEN}}>$ (unergative verb, movement)

On the other hand, when the verb in an unaccusative sentence is given and the subject is new, there are no word order changes—the verb stays in situ. No movement is necessary because the underlying word order, with the unaccusative subject merged as an object, obeys given-new ordering, *New ≻ Given (192).

(192) V_{GIVEN} ‖ S_{NEW} (unaccusative verb, no movement)

In an all-new sentence, no part of the sentence is given, so the givenness operator has no work to do. The underlying word order with no givenness-related movement is therefore acceptable for all all-new sentences. This means that in Czech, an all-new sentence that is unaccusative (V-S word order, as in (192)) can be ambiguous between a given-new interpretation and an all-new interpretation. It also means that an all-new interpretation is not available for an unergative sentence with V-S word order.

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4.2 Experimental background

4.2.1 Prince (1981, 1992)

Most previous work on information status and grammatical role has focused on the information status of subjects, and this work has shown that in general, subjects tend not to be new. Prince (1981) was among perhaps the first to examine the relationship between grammatical role and information status in a corpus study. Although Prince (1981) does not make argument structural distinctions (subjects of transitive and intransitive sentences are treated alike in her work), this work is seminal in research on subjecthood and information status. It was in this work that Prince developed the taxonomy of information status shown in (193) (Prince, 1981: 237), with some added examples.

(193) Familiarity taxonomy from Prince (1981: 237)

```
                              Assumed Familiarity
              _____|_____
             |                        |                        |
            New                   Inferrable                 Evoked
         ____|____              _____|_____              _____|_____
        |         |            |           |            |           |
    Brand-New   Unused   Non-containing  Containing  textually   situationally

      ____|____   the sun  one of these eggs (part-whole)  (uttered)  (pointed at)
     |         |
 unanchored anchored

  a hippie  a hippie I know
```
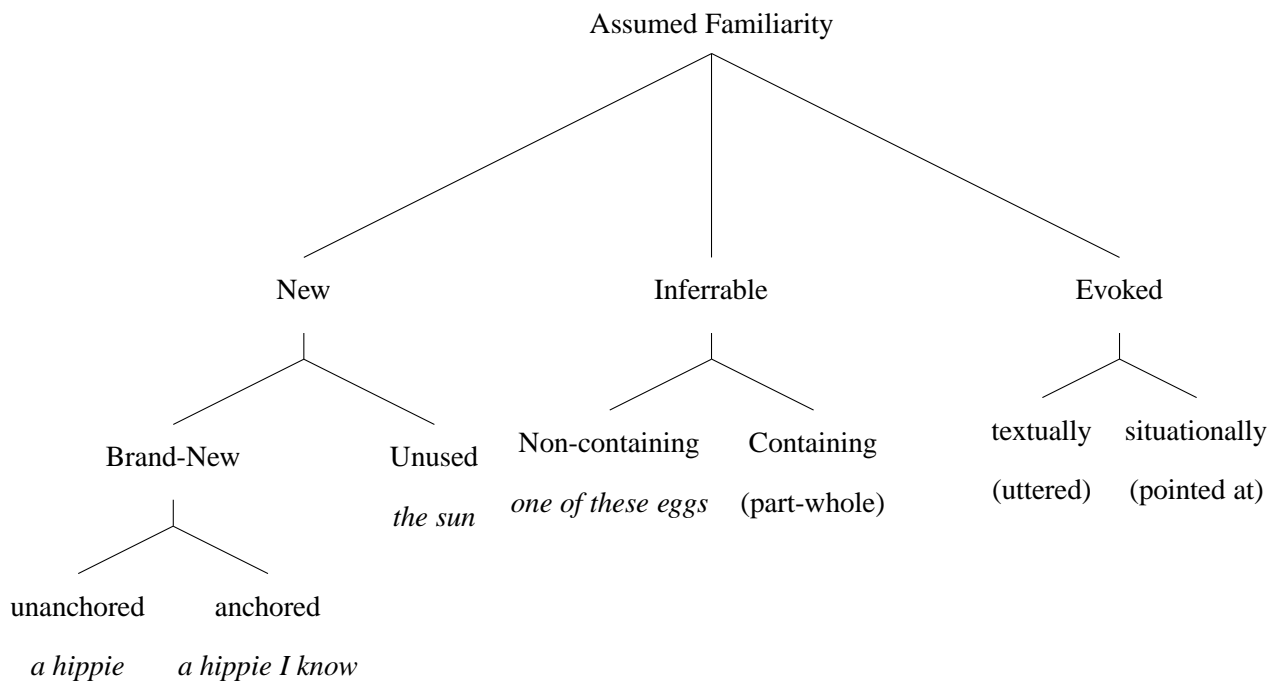
Prince (1981) presents the analysis of two corpora in which the information status of subjects and non-subjects was coded according to the scheme in (193). One of the corpora was a short oral narrative, and the other consisted of two pages of a sociolinguistic textbook. The results are given in Table 4.2.

Subject information status from Prince (1981)

	Oral Text, (N=76)	**Written Text**, (N=12)
NEW	0%	8.3%
INFERRABLE	6.6%	41.7%
EVOKED	93.4%	50.0%

Table 4.2: Results for subjects from Prince (1981: 243, 250)

The breakdown for non-subjects shows that these are comparatively more likely to have the information status NEW, as shown in Table 4.3.

Non-subject information status from Prince (1981)

	Oral Text, (N=43)	**Written Text**, (N=16)
NEW	20.9%	25.0%
INFERRABLE	30.2%	62.5%
EVOKED	48.8%	12.5%

Table 4.3: Results for non-subjects from Prince (1981: 243, 250)

In the famous "ZPG Letter" analysis, Prince (1992: 313) found similar results. Using a slightly different coding scheme for information status, Prince (1992: 316) found that 6% of subjects were discourse-new. Interestingly, this study also found that 10% of subjects were indefinite, and 38% were indefinite (the rest were pronominal). Using a regression analysis, Prince also found that discourse status was a better predictor of subjecthood in this corpus than definiteness was (Prince, 1992: 316). Prince observes that, if the subjects in the ZPG letter are considered topics, then her results support Reinhart's (1981) argument against the view that topics always represent old information, although they are more likely to be old (Prince, 1992: 318).

Francis et al. (1999) performed a corpus study exploring the distribution of subject and object forms in the Switchboard Corpus, finding that 91% of subjects were pronominal, and 9% were "lexical" (full DPs), and that "objects" were 34% pronominal (Francis et al., 1999: 86). This study also found that only 2% of the "lexical" subjects were those headed by the indefinite article (Francis et al., 1999: 92).[7]

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[7]This research is also reported on in Michaelis and Francis (2007).

These results all show that although new subjects are rare, they do occur. But this research has not explored the role that argument structure might play in those rare cases when subjects are new. The corpus study described in the next section (Du Bois, 1987), however, looks specifically at argument structure, in terms of transitivity and case marking, and provides experimental motivation for the hypothesis that new discourse referents are introduced unaccusative rather than unergative sentences.

4.2.2 Du Bois (1987)

In a corpus study of Sacapultec, a Mayan ergative language, Du Bois (1987) showed that new discourse referents were more likely to occur in absolutive case than in ergative case. In an ergative language, the subject of a transitive verb is marked with ergative case, while the object of a transitive verb and the subject of an intransitive verb are marked with absolutive case. The ergative pattern is summarized schematically in (194), using the conventional (though confusing) abbreviations from Dixon (1979) of *A* for subject of transitive, *O* for object of transitive, and *S* for subject of intransitive.

(194)   Absolutive Case Marking: Object of Transitive, Subject of Intransitive

       A   *verb*   O⎤

                          ABSOLUTIVE

       S⎦   *verb*

Du Bois (1987) found that a new discourse referent in Sacapultec was much more likely to be introduced as the object of a transitive verb or the subject of an intran-

sitive verb than as the subject of a transitive verb. One of the questions raised by Du Bois's work is how to characterize this generalization in a non-ergative language. In other words, what unifies transitive direct objects with (perhaps some) subjects? Du Bois (1987) claimed that the answer was case. But Du Bois (1987) did not examine whether the set of intransitive sentences with absolutive subjects consisted of different subtypes, with different merge positions of the single argument in the sentence.[8]

If we pair Du Bois's findings (195) with the Unaccusative Hypothesis (196), we get the prediction that is being tested here, given in (197): when a new discourse referent is introduced in an intransitive sentence, the sentence will be unaccusative rather than unergative.

(195)   *Du Bois's Generalization*

         New discourse referents are introduced in absolutive case (object of transitive verb, subject of intransitive verb)

(196)   *Unaccusative Hypothesis*

         Some intransitive subjects are derived and are underlyingly direct objects.

(197)   *Prediction*

         When a new discourse referent is introduced as the subject in an intransitive sentence, the sentence will be unaccusative rather than unergative.

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[8]Many "ergative" languages actually exhibit split-ergativity in that in some tenses, the subjects of unergative predicates are marked with ergative (not absolutive) case, thus dividing the class of intransitives (see e.g., McGregor 2009; see also Marantz (2000) for a discussion of the Hindi-Urdu and Georgian facts). If Sacapultec were such a language, it would have been easy to explore my hypothesis with Du Bois's data.

As noted above, I propose refining the prediction in (197) such that only a subtype of unaccusative sentences can establish new discourse referents.

4.2.3 Summary

Before moving on to the corpus experiment itself, let us review the two hypotheses that the corpus experiment was designed to test. The first hypothesis is given in (198) and illustrated in (199).

(198)   Hypothesis 1: When a discourse referent is introduced in an intransitive sentence, the sentence will be unaccusative, not unergative.

(199)   Hypothesis 1 predictions

    a.   A hippie sneezed.   unergative $\rightsquigarrow$ # discourse referent

    b.   A hippie arrived/froze.   unaccusative $\rightsquigarrow$ ✓ discourse referent

The second hypothesis is given in (200) and illustrated in (201). This hypothesis predicts that the distribution of verb types in sentences with new subjects will not be the same, and that only unaccusative sentences with the complex complement (SC) structure will have new subjects. Hypothesis 2 predicts that change-of-state unaccusatives like *freeze* and *break* will not introduce new discourse referents, since these roots generally occur in the simple complement structure.

(200)   Hypothesis 2: Only a subset of unaccusatives can introduce new discourse referents, those with the complex complement structure

(201)   Hypothesis 2 predictions

a. <u>A hippie</u> froze.   unacc change-of-state ⤳ # discourse referent

b. <u>A hippie</u> arrived.   unacc motion/existence ⤳ ✓ discourse referent

4.3   Experiment

4.3.1   Corpus

Sentences were extracted from a subset of the Switchboard Corpus (Godfrey et al., 1992) that was annotated for both syntactic structure (part of the Penn Treebank, (Marcus et al., 1993), grammatical role ("predicate argument structure," Marcus et al. 1994) and information status (Calhoun et al., 2005). This corpus consists of telephone conversations between strangers who were instructed to have a conversation on one of a list of topics. Most of the conversations are about 6 minutes long (Calhoun et al., 2005: 45). Although the Switchboard Corpus includes recordings of these conversations, a parsed transcription of the corpus was used for the current experiment, and prosodic information was not examined.

A backtranslated version of the parsed corpus was used so that regular expression searching could be done, as will be detailed below. Calhoun et al. (2005) describe the annotation scheme for the information status of discourse entities (termed "markables" in this annotation scheme), which was based on Prince (1992) and other work. Three top-level categories were used: new, mediated, and given, where the MEDIATED and GIVEN categories were further subdivided. The category NEW was defined as in (202).

(202)   NEW: "The category new is assigned to entities that have not yet been introduced in the dialogue and that the hearer cannot infer from previously mentioned entities." (Calhoun et al., 2005: 46)

This category corresponds to the discourse-new/hearer-new categories of Prince (1992) and to the "brand new" categories of Prince (1981). The category NEW was not given further subtypes, and it therefore includes both "brand new unanchored" (e.g., *a hippie*) and "brand new anchored" (e.g. *a hippie I know*) entities, to use the terminology of Prince (1981).

The definition of MEDIATED corresponds to Prince's (1981) "inferrables", defined in (203) (see also Birner, 1996).

(203)   MEDIATED: "Mediated entities are inferrable from previously mentioned ones, or generally known to the hearer." (Calhoun et al., 2005: 46)

This category included 9 different subtypes, including, for example, a category GEN-ERAL for "generally known" entities like *the sun* and *Italy* (Calhoun et al., 2005: 46)[9] See Calhoun et al. (2005) for more information on the subdistinctions in the MEDI-ATED category.

OLD was defined as in (204), and this category had 6 subtypes.

(204)   OLD: "An entity is old when it is not new nor mediated." (Calhoun et al., 2005: 47)

---

[9]The MEDIATED-GENERAL category covers what Prince (1981) refers to as the "staples" of a conversation, those entities that on their first mention are "new-unused".

Calhoun notes that an old entities included those that were "coreferential with an already introduced entity," generic pronouns, and pronouns referring to the participants in the dialogue (Calhoun et al., 2005: 47).[10]

A total of 147 dialogues in the Switchboard Corpus (43,358 sentences) were annotated using this scheme (Calhoun et al., 2005: 48). Only the top-level information status distinctions were explored in the current experiment.

4.3.2 Method

4.3.2.1 Sentence extraction

Sentences were extracted from the corpus using TGrep2 (Rohde, 2005), which allows for search using a regular expression-like syntax. Example (205) shows the search string used for sentences with subjects that have the status NEW.

(205)   Example of regular expression for sentences with NEW subjects

```
/^S/ < ((/^NP-SBJ_.*[^_]_new/) $ (/^VP/ << /^VB/))
```

This search extracts all the sentences that have a NP subject annotated as "new," where the NP has a VP sister, and where the VP dominates a verb.[11] The expression in (205) was embedded in a larger string conforming to TGrep2 syntax with commands to format the output so that sorting and hand-coding of the results could be done. Table 4.4 shows the columns and sample row of the formatted output (where the

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[10]The annotation scheme also included categories to weed out "wrongly extracted markables," fragments that were not understandable, and non-referring NPs like expletives (Calhoun et al., 2005: 46).

[11]This search disregards material in the annotation string between 'NP-SBJ and '_new'. The full annotation of an NP node that this searchstring matches is: NP-SBJ_MARKABLE_nonconc_new.

complete Treebank structure for sentence 869:67 is elided and given more fully in Table 4.5.

sentence:node	subject	verb	complete VP	sentence	structure
869:67	the phone	rang	rang	the phone rang	(S (NP-SBJ_

Table 4.4: Sample formatted output

structure
(S (NP-SBJ_MARKABLE_concrete_new (DT the) (NN phone)) (VP (VBD rang) ...))

Table 4.5: TGrep2 treebank structure

The search for sentences with NEW subjects yielded 425 sentences. A similar search was performed for sentences with OLD subjects (total N=17,256). As a control group, a search was done for sentences of any information status (total N=117,288); the control group will be referred to as the ANY group.

In order to balance the N's between the three groups, NEW, OLD and ANY, the NEW group was first coded (see §4.3.2.2). The OLD and ANY groups were then randomly sorted, and the first 500 sentences of each were selected and handcoded until the total N for each group approximated the N for the NEW group.

4.3.2.2 Hand-coding for predicate type

Many sentences were discarded from analysis. Table 4.6 shows the types of excluded sentences along with examples. A few questions were extracted due to coding mistakes in the corpus.

Name for exclusion type	Example
discourse	*you know*; *oh I see*
ellipsis/pro-form VPs	*they are; they do it*
impersonal subject	*it takes . . .*
unclear	*I've ever seen them not look happy, you do yours at work*
questions	*um, so well, do you think . . .*
fragments/disfluencies	*but, you know, it was, this is*
set phrases	*the rich get richer*
compound sentences	*he turned and asked this girl*
light verb constructions	*they'll just come jump on your lap*
imperative	*let's find a middle ground; give me five minutes*
incomplete sentence	*some , uh , jerk coming in*

Table 4.6: Excluded sentence types

After removing unusable sentences of the types in Table 4.6, the total number of sentences with NEW subjects was 333. Sentences were then hand-coded as transitive, intransitive, copular, and miscellaneous/other. Transitive sentences included the following sub-categories: transitive-*have*, psych verbs (e.g. *worry*), and null-object verbs (e.g., *that helps*). Some types in the miscellaneous category include *get* passives and pseudo-passives. Intransitives included unaccusative, unergative, intransitive psych predicates and passives. This chapter reports only on intransitive sentences that fell into the unaccusative and unergative categories; these categories are described below.

The coding for intransitive predicate type was based on those used in previous experimental work (Lozanó and Mendikoetxea, 2010) and the verb classes in Levin (1993). Table 4.7 and Table 4.8 give the semantic classes used for unaccusative and unergative classification, based on Lozanó and Mendikoetxea (2010: 484). Not all unaccusative verb types in Table 4.7 were represented in the data extracted from the corpus.

Unaccusative categorization

semantic category	example
Existence	*exist, live, remain, rise*
Appearance	*appear, emerge, happen, occur*
Disappearance	*die, disappear*
Inherently-directed motion	*arrive, come, drop, enter*
Change of state	*break, burn, melt, freeze*

Table 4.7: Semantic categories: Unaccusative VPs

Unergative categorization

semantic category	example
Emission (light, sound, smell)	*beam, boom, smell*
Communication	*cry, sing*
Bodily processes	*cough, sweat*
Performance	*dance, phone, play, sing, work*
Manner of motion	*jump, run, swim*

Table 4.8: Semantic categories: Unergative VPs

In order to keep the samples balanced, only 50–60 tokens were used for the OLD and the ANY categories. Since the searches for sentences with non-NEW subjects yielded a higher number of sentences than the search for sentences with NEW subjects, the results of these searches were treated in the following away: the search results were randomized, and then the first 500 tokens were selected. Coding proceeded, as described above, until a total of 50–60 tokens was reached.

4.4 Results

4.4.1 Overall results

Table 4.9 and Table 4.10 show the distribution of transitive, intransitive, copular and transitive-*have* sentences in the NEW group (Table 4.9), and the distribution of unergatives and unaccusatives within the intransitives (Table 4.10).[12,13,14]

Sentence type	N
transitive-*have*	310
copular	149
transitive	74
intransitive	57
passive	26
total	616

VP type	N
unaccusative	43
unergative	7
stative (excluded)	2
reciprocal (excluded)	2
aspectual (excluded)	1
psych (excluded)	1
reflexive (excluded)	1
total	57

Table 4.9: All sentences: NEW subjects   Table 4.10: Intransitives: NEW subjects

The distribution of sentences with OLD subjects is shown in Table 4.11 and Table 4.12. The *N* for the intransitives is particularly low because approximately 500 sentences were selected randomly from those returned by the search for OLD subjects, and many of these sentences (approximately 125) were not usable for the reasons given in Table 4.6.

The distributions for sentences extracted with subjects of ANY information status are shown in Table 4.13 and Table 4.14.

---

[12]Transitive count includes 4 tokens of the benefactive null object verb *vote* (Levin, 1993: 46).

[13]The two intransitive statives were *cost* and *belong*. The reciprocal was *get along*. The reflexive was *set up* in: *the company or agency might , uh , have set up for those who genuinely have a problem.* The aspectual verb was *go on strike*.

[14]The numbers in these tables differ slightly from those reported in Irwin (2011) and Irwin (2012) because a coding error was found and corrected.

Sentence type	N
transitive	231
copular	107
intransitive	43
transitive-*have*	37
passive	15
total	433

Table 4.11: All sentences: OLD subjects

VP type	N
unaccusative	23
unergative	18
reciprocal (excluded)	2
psych (excluded)	2
total	45

Table 4.12: Intransitives: OLD subjects

Sentence type	N
transitive	308
copular	244
intransitive	71
transitive-*have*	55
passive	19
total	

Table 4.13: All sentences: ANY subjects

VP type	N
unaccusative	41
unergative	29
total	70

Table 4.14: Intransitives: ANY subjects

4.4.2 Analysis

The following tables show the N's (with percentages) that were submitted to statistical analysis using a Chi-squared test.

VP type	N	ratio
unaccusative	43	86%
unergative	7	14%
total	50	100%

Table 4.15: NEW

VP type	N	ratio
unaccusative	41	59%
unergative	29	41%
total	70	100%

Table 4.16: ANY

A Pearson's Chi-squared test showed that the distribution of unergative and unaccusative sentences in the ANY and NEW groups differed from each other significantly, $\chi^2 = 10.449$, df = 1, p = 0.001227. These results show that given the frequency of unaccusatives in the corpus overall with subjects of any information

status, the high frequency of unaccusatives with the NEW group is not the result of chance. These results show that Hypothesis 1 is supported.

(206)   √Hypothesis 1: When a discourse referent is introduced in an intransitive sentence, the sentence will be unaccusative, not unergative.

Before discussing the semantic types of the unaccusative sentences that occurred with NEW subjects (Hypothesis 2), I will briefly present the results of goodness-of-fit tests between the OLD vs. NEW distributions, and the ANY vs. OLD distributions.

Table 4.17 and Table 4.18 show descriptive statistics for the ANY and OLD groups. A Pearson's Chi-squared test showed that the distribution of OLD subjects did not differ significantly from the distribution of randomly-chosen subjects of any information status, $\chi^2 = 0.0648$, df = 1, p-value = 0.799. This result is expected, given the fact that subjects tend to be topics, and topics usually represent old information.

VP type	N	ratio
unaccusative	41	59%
unergative	29	41%
total	70	100%

Table 4.17: ANY

VP type	N	ratio
unaccusative	23	56%
unergative	18	44%
total	41	100%

Table 4.18: OLD

As expected, the distribution between OLD and NEW subjects also differs significantly, Pearson's $\chi^2 = 10.1094$, df = 1, p-value = 0.001475. The descriptive statistics for these groups are shown in Table 4.19 and Table 4.20. Given the results of both the ANY vs. NEW group and the ANY vs. OLD, it is not surprising the NEW group differs from the OLD group, since the OLD and ANY groups do not differ from each

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other.

VP type	N	ratio
unaccusative	23	56%
unergative	18	44%
total	41	100%

Table 4.19: OLD

VP type	N	ratio
unaccusative	43	86%
unergative	7	14%
total	50	100%

Table 4.20: NEW

We now turn to Hypothesis 2, given in (200). This hypothesis predicted differences in verb types *within* the unaccusative NEW group, such that change-of-state unaccusatives like *freeze* and *break* would not be represented, and motion/existence unaccusatives like *arrive*, *drive up*, and *come in* would be represented. As we see in Table 4.21, most verbs (91%) in the NEW group were from the motion/existence classes.

	Change of state	Existence + Motion
NEW	4 (9%)	39 (91%)
ANY	9 (21%)	33 (79%)

Table 4.21: Change-of-state vs. Motion+existence verbs

The distribution of change-of-state vs. existence/motion verbs in the NEW and ANY groups in Table 4.21 were not found to be significant, however, Pearson's χ^2 = 2.4116, df = 1, p = 0.1204 (*n.s.*).

(207)   [*null result*] Hypothesis 2: Only a subset of unaccusatives will occur with discourse-new subjects.

Hypothesis 2 was not supported. The trend is in predicted direction, however, as we see in Table 4.21. In the first column of this table, the number of change-of-state verbs more than doubles when we go from the NEW group (N=4) down to the ANY group (N=9).

4.4.3 Discussion

Table 4.21 shows that there were 4 sentences with change-of-state verbs and discourse-new subjects. According to Hypothesis 2, these were predicted not to occur. This section will discuss these sentences in comparison to the existence/motion sentences with discourse-new subjects. I will suggest that the exceptional sentences—the ones with change-of-state verbs—are unlikely to be counterexamples to the hypothesis, despite being classified as NEW in the corpus annotation.

Table 4.22 shows the sentences with these change-of-state verbs with discourse-new subjects. These sentences are given in the form of linguistic examples in (208).

	sentence:node	sentence
(a)	19264:24	corn didn't grow there
(b)	134654:25	some highways closed
(c)	58261:13	well, uh, the roles have definitely changed in the last generation or so
(d)	61317:12	they graduated

Table 4.22: The exceptions: NEW subjects with change-of-state verbs

(208)   Change-of-state verbs with subjects annotated as NEW

    a.   Corn didn't grow there.

    b.   Some highways closed.

c. The roles have definitely changed in the last generation or so.

d. They graduated.

Let us consider each of these examples. Sentence (208a) is negated, and therefore cannot establish a discourse referent. We saw this in the discussion of (163), one of Karttunen's famous examples. Sentence (208d) has a pronominal subject. It is not clear why this subject was annotated as discourse-new, since pronouns are almost always given. More investigation of the context of this sentence will reveal whether this token was simply a coding mistake or whether this subject is genuinely discourse new. Similarly, sentence (208c) contains a definite subject, so it is surprising that this DP was annotated as new.

Sentence (208b) is the most likely counterexample to Hypothesis 2, because it contains the verb *close*, a classic change-of-state unaccusative. Like *open*, *close* participates in the causative/inchoative alternation, and it allows adjectival resultatives. As with (208d), a closer look at the surrounding sentences will reveal whether this sentence introduces a discourse referent (the highways) that is subsequently referred to, or whether it simply introduces an event that involved the closing of some highways (e.g., increasing commuting time).

Turning to the existence/motion sentences (N=39; see Table 4.21), we also see some questionable discourse-new subjects, but these examples are more convincing than those in the change-of-state category. Table 4.23 shows a selection the existence/motion sentences with NEW subjects. (See Appendix: Corpus Experiment Data for tables with all the data.)

	sentence:node	sentence
(a)	168491:10	things don't go right
(b)	18911:130	a war starts
(c)	40295:10	school holidays come around
(d)	48236:19	a lot of aggravation comes
(e)	77231:11	and then came a woman that . . .
(f)	138531:14	the guy came over
(g)	41199:41	a group come over from one of the banks
(h)	62698:12	that stink came around in the design area a few years back
(i)	56474:29	customers are coming in

Table 4.23: Existence/motion verb sentences with NEW subjects

In future work on these results, it will be helpful to look at the broader context of both the predicted and the unpredicted sentences. Looking at the broader context—the sentences preceding and following the token sentences—will reveal is whether the DPs annotated as NEW are subsequently referred to. It should be emphasized, though, that subsequent reference is not what determines whether or not a DP is a discourse referent. A discourse referent is simply a DP that *can* be subsequently referred to—for example by a pronoun or by a definite DP. Karttunen's examples use subsequent reference as a diagnostic illustrating the possibility of subsequent reference.

(209)   Bill saw <u>a unicorn</u>.

For example, sentence (209) from (162) above, establishes *a unicorn* as a discourse referent, whether or not the unicorn is subsequently referred to.

4.5 Conclusion

In conclusion, let us consider the mechanism for the establishment of discourse referents that was proposed in Chapter 3 and discussed in this chapter. The mechanism was given in (156) and is repeated below as (210).

(210)   Conditions for new discourse referent establishment

      i.   Asymmetrical relationship (predication) between two phrases

     ii.   Existential closure ($\exists$C) at the vP

I hypothesize that the conditions in (210) are the two positive conditions that allow direct objects in transitive sentences to establish new discourse referents. (There are many negative conditions on the establishment of new discourse referents, as we saw with the sentences from Karttunen discussed above.) I have also hypothesized that condition (i) is a requirement for condition (ii)—that $\exists$C does not come for free, and that $\exists$C is possible at the vP (Diesing, 1992) only in the presence of a predication.

When we turn to unaccusative direct objects, we can ask whether our two unaccusative structures satisfy the conditions in (210). I have argued that the simple complement structure does not satisfy these conditions. In other words, I have argued that the structure that usually contains change of state roots such as *break* and *freeze* does not have a predication (does not satisfy condition (i)), and so does not allow $\exists$C to occur at the vP (condition (ii)). I have argued that the complex complement structure, on the other hand—the structure that usually contains roots such as *arrive* and *come in*—does involve a predication (condition (ii)) and so does allow $\exists$C to

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occur at the vP. Note that ∃C does not have to occur, even if the conditions for it are met.

The conclusion we are led to from the corpus study and the theoretical proposal above is that, in terms of information structure, transitive direct objects pattern with only one type of unaccusative direct object (the *arrive* type); simple complement (*break*-type) direct objects, on the other hand, pattern with external arguments. These groupings are summarized in Table 4.24.

✓new discourse referent	# new discourse referent
transitive direct objects	transitive external argument
***arrive*-type direct objects**	***break*-type direct objects**
	unergative external argument

Table 4.24: Differing information structural properties of two types of unaccusatives

For clarity, the generalizations from Table 4.24 are given as example sentences in Table 4.25.

✓new discourse referent	**# new discourse referent**
Jamie broke a vase	#A hippie broke a vase
A vase arrived	#A vase broke
	#A hippie sneezed

Table 4.25: Information structural groupings: Example sentences

Table 4.24 and Table 4.25 are meant to show that one class of unaccusative structures patterns with transitive direct objects in satisfying the conditions given in (210). The single argument in the other class of unaccusatives—the simple comple-

ment or *break*-type unaccusative—patterns with external arguments in not satisfying the conditions in (210).[15,16]

These conclusions do not entail that external arguments or intransitive sentences with the simple complement (*break*-type) structure cannot ever establish discourse referents. Many speakers judge a discourse like (211) to sound perfectly normal.

(211)   a.   <u>A vase</u> broke.

           b.   . . . <u>It</u> was Jamie's favorite.

When (211a) establishes a discourse referent for *a vase*, it must do so by satisfying conditions other than those given in (210). In other words, the means by which sentence (211) establishes a discourse referent are different from those that we have been discussing, the conditions by which transitive and *arrive*-type unaccusative sentences establish discourse referents.

I would like to propose that sentences like (211a) most often serve to introduce events rather than entities. Informally, we might think of such sentences as "scene-setting," by which I mean sentences that provide background information in the form of events that describe the present moment. The claim that sentences like

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[15]These generalizations are argued to hold for main clause sentences; they leave open the possibility that external arguments in embedded sentences may be able to satisfy the conditions in (210).

[16]An interesting psycholinguistic study has shown that the two types of unaccusatives have different effects with respect to priming of traces. Using cross-modal lexical priming, Friedmann et al. (2008) found that the subjects in unaccusative sentences are reactivated after the verb, whereas subjects in unergative sentences are not reactivated after the verb. Furthermore, they found differences among the unaccusatives with respect to activation of the direct object: the argument of non-alternating unaccusatives (e.g. *arrive*) was strongly activated post-verbally, and the activation of some alternating unaccusatives (e.g., *break*) patterned with unergatives in being considerably degraded (Friedmann et al., 2008: 365).

(211a) introduce events is supported, indirectly, in the literature on implicit arguments, where subsequent reference is to an event of vase-breaking.

(212)   A vase broke yesterday. The person who did it will never confess.
          (Farkas and de Swart, 2003: 80)

In (212), for example, *it* refers to an event, not to a vase. The difference between event- and entity-introduction is related to a distinction that linguists have sometimes found useful in explaining information structural phenomena, as I discuss below.

4.5.1   Presentation and the thetic/categorical distinction

The notion of sentences that serve only to introduce events and entities is related to what has been called the thetic/categorical distinction. Ladusaw (1994) discusses the historical origin of the terms 'thetic' and 'categorical' and connects them to the strong/weak distinction in determiners. My discussion of these concepts below draws much from Ladusaw's explication of this (often slippery) distinction.

   One point that Ladusaw makes is that the thetic/categorical distinction originally concerned different types of "cognitive acts" on the part of a listener. In this way, the thetic/categorical distinction does not directly concern the forms of sentences. This is why, in the literature that draws on the thetic/categorical distinction, a sentence might be referred to as involving a thetic or categorical *judgment*. A categorical judgment can be said to involve the attribution of a property to an entity, where that entity is presupposed: "The basis for a categorical judgment is compound: first a presentation which is clarified into a particular object satisfying the description, and then a property to be affirmed or denied of the object" (Ladusaw, 1994: 4). A thetic

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judgment is said to involve just one cognitive act: "the basis for a thetic judgment is a presentation of an object: an entity or eventuality" (Ladusaw, 1994: 4). This judgment commits the listener to the existence of the entity that was presented. Although it is therefore not strictly speaking correct to talk about thetic and categorical *sentences*, I will follow the literature and do so, in order to simplify the discussion in this section.

According to Ladusaw, who summarizes the insights from Kuroda (1972) (as well as Brentano, 1874, 1924), Japanese subject markers illustrate this distinction. The morpheme -*wa* marks the "logical Subject" of a categorical judgment. It draws attention to an entity (whose existence is presupposed) and predicates something of it. Ladusaw gives Kuroda's illustration of a categorical judgment in Japanese, as shown in (213).

(213)   Categorical judgment: subject marked with -*wa*   (Japanese)

neko-**wa** asoko de nemutte iru
cat-**WA**   there sleeping   is
the cat is sleeping there

Viewed in this way, we might think of a categorical judgment as one that involves a "topic-comment" information structure, where the topic is information familiar to speaker and listener, and the comment is new. The translation of (213) uses the English definite article with the (article-less, as Ladusaw points out) *cat*.

The morpheme -*ga* marks the subject of a thetic judgment, which is commonly understood to involve the presentation of an entity or an eventuality. Kuroda's example is shown in (214).

(214)   Thetic judgment: subject marked with *-ga*   (Japanese)

> neko-**ga** asoko de nemutte iru
> cat-**GA** there sleeping   is
> *the/a cat is sleeping there*

The literature on the thetic/categorical distinction is large, and this overview does not to justice to it. But using what we have learned from my summary of Ladusaw's explication, we now can ask how these terms relate to the proposal I have given for the establishment of new discourse referents.

On the one hand, since sentences that result in thetic judgments are considered "presentational," we would expect that sentences like those in (215), which I claim to have the complex complement/SC structure, to be thetic.

(215)   Thetic or categorical?

    a.   A hippie arrived.

    b.   A colorful van pulled up.

But the structure of sentences like those in (215), I have claimed, involves a predication. For example, in my analysis of (215b), there is a predication is between the DP *a colorful van* and the contextually determined element labeled PLACE. This sentence therefore has a topic-comment structure, where the topic is the contextually determined location, and the comment is *a colorful van*. The low topic-comment structure that I propose these sentences to have leads to what might seem like a surprising conclusion: the sentences like (215) are categorical. The sentences in (215) are categorical because they take a presupposed entity—in this case, a place—and predicate something of it. We might think of them hidden categorical statements,

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since they do not have an overt topic, like a pronoun, as we see in a more conventional topic-comment sentence like (216).

(216)   I saw a unicorn.

I have argued that change of state unaccusative sentences like (217) do not have a predication in the relevant sense. These sentences have the simple complement structure, in which we simply have a DP complement of an event-introducing *v* head.

(217)   A vase broke

The simple complement structure does not have a predication, and it does not allow for $\exists C$ at the vP. In the thetic/categorical terminology, then, a sentence like (217) is thetic: it simply affirms the existence of a vase-breaking event.

The analysis here and the results of the corpus study suggest that we should make a distinction between event-introducing sentences and entity-introducing sentences. The prototypical "presentational" sentences like (215a) and (215b)—the type that Guéron (1980) talks about—are sentences that introduce entities, not events. I propose that these presentational sentences are categorical, not thetic: syntactically, they involve either the complex complement (SC) type of unaccusative, or they are transitive sentences (where the new entity is a direct object).[17] I have argued that unergatives and *break*-type unaccusatives, on the other hand, do not introduce new discourse referents in the same manner as transitives and SC unaccusatives. When these sentences have all-new subjects, they are the event-introducing sentences. In

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[17]Future work will determine whether all transitive direct objects should be analyzed the same with regard to predication and the availability of existential closure.

other words, we should think of all-new unergatives and *break*-type unaccusatives as prototypical thetic sentences.

This chapter has argued that syntactic structure has detectable information structural effects. I have shown that in terms of information structure, all-new complex complement (SC-type) unaccusatives pattern with transitives, and simple complement (*break*-type) unaccusatives pattern with unergatives. I have also proposed that this split in the class of unaccusatives can shed some light on the thetic/categorical distinction. We will now turn to unaccusativity at the syntax-prosody interface, where I will argue that prosody cuts across all-new sentences differently, with the two unaccusative structures patterning together on one side, and transitive and unergative structures on the other.

CHAPTER 5

The Prosodic Consequences of Unaccusativity

5.0 Introduction

We have looked at the interface of syntax with the interpretive component of the grammar and seen that only one type of unaccusative structure has the configuration that allows existential closure to occur on an indefinite DP; as a consequence, only one type of unaccusative sentence can serve to introduce a new discourse referent according to the criteria I have proposed. The two unaccusative structures we have seen thus have different effects at the interface with the interpretive component of the grammar. We now turn to the interface of syntax with the phonological component of the grammar, and we will focus specifically on the effects that unaccusative structures have with respect to prosodic prominence (phrase stress). In this chapter, I offer an analysis as to why all-new unaccusative sentences have different stress patterns from unergative sentences. I will propose that phasal properties at the voiceP

level separates unergative from unaccusative sentences with respect to prosody. We will also see that all-new unaccusative sentences of both types share the same broad prosodic structure—despite their different information structural properties.

Syntactic structure has been shown to have a strong influence on prosody, though much work at the interface shows that syntax is not the "sole and direct determinant" of prosodic phrasing (Shattuck-Hufnagel, 2000: 202). This situation leads to the question of what aspects of syntactic structure play a role in prosodic phrasing. This chapter pursues the hypothesis that the aspect of syntax that has the most important effect on prosody is the syntactic phase (Chomsky, 2000, 2001, 2008). Specifically, I argue that the effects of phases can be seen in the distribution pitch accents in all-new sentences.[1]

The first goal of this chapter is to show how a phase-based account of the syntax-prosody interface predicts the distribution of phrase stress in all-new unaccusative and unergative sentences. On this account, all-new unaccusative sentences have one syntactic phase and therefore one domain for accent assignment, and all-new unergative sentences have either one phase or two phases, and therefore either one domain or two domains for accent assignment. These generalizations are shown in (218)–(219), with capitalization indicating phrase stress. Notice that both change-of-state unaccusative sentences (218a) and motion/existence unaccusative sentences (218b) have the subject-accent pattern.

[1]Selkirk (2008, 2007, 2011) argues that all-new sentences reflect "default prosody" or "default phrase stress".

(218)   Subject accent in unaccusative sentences

    a.   A VASE broke.   *subject-accent pattern*

    b.   Some HIPPIES arrived.   *subject-accent pattern*

In contrast, unergative sentences have either the "verb-accent pattern" (219a) or the "two-domain pattern" (219b).

(219)   Variable accent in unergative sentences

    a.   A boy JUMPED.   *verb-accent pattern*

    b.   A BOY JUMPED.   *two-domain pattern*

The pronunciations shown in (218)–(219) have been reported in the theoretical literature (Zubizarreta and Vergnaud, 2006), as I discuss below. The nature of the generalization for unergative sentences has not been so clear-cut, however. Some report the verb-accent pattern (Kahnemuyipour, 2004, 2009: 64–65), and others report that either accent pattern is possible (Zubizarreta and Vergnaud, 2006).[2] Still others do not have strong intuitions about the prosody of these sentences. The pronunciations shown in (219a) and (219a) are supported experimentally by the production study described in Irwin (2011).[3] In §5.4.1.1, I discuss some cases in which seem-

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[2]Kratzer and Selkirk (2007) discuss the prosody of stative (I-level) unergative sentences in German (e.g., with the verb *spinnen* 'to be crazy') and say that these have the subject-accent pattern. I set these data aside for now. Stative all-new sentences sound very odd in my judgment. Consider a possible stative unergative, *sucks*: ??*a book sucks!* (all-new) vs. *that book sucks!* (contains deictic element). One possible exception is copular BE sentences—which come with a host of other considerations.

[3]Hoskins (1996) found a similar result, though this experiment had some methodological weaknesses. The only other study of prosody and the unergative/unaccusative distinction in intransitive sentences is Hirsch and Wagner (2011), which found a null result. See also Zubizarreta and Nava (2011) for a related study with similar findings to the one here, but with a different theoretical conclusion.

ingly all-new unergative sentences, such as example (220), appear to always have the subject-accent pattern.

(220)   The BABY cried.

This chapter also considers the prosody of *there*-insertion sentences. I argue that *there*-insertion sentences (of the type that we have been considering here) have two domains for accent assignment, despite the fact that they are unaccusative. Specifically, I claim that unaccusative *there*-insertion sentences have the two-domain pattern (221).

(221)   There ARRIVED some HIPPIES.   *two-domain pattern*

Because phase theory is a relatively new approach to cyclicity in syntax and to the relationship of syntax to its interfaces, researchers are still working out the ways in which phases matter for the interfaces. In addition to presenting my analysis for the prosody of unaccusative sentences, the second goal of this chapter is to clarify what the possible phase-based theories of the syntax-prosody interface are. In doing so, I will discuss the strengths and weaknesses of three attempts to implement a phase-based theory of prosody: Adger (2003), Kahnemuyipour (2009, 2004), Kratzer and Selkirk (2007). I will argue that an approach along the lines of Kratzer and Selkirk (2007) and Selkirk (2011) gives the best account of what we know about all-new prosody in transitive and intransitive sentences and how prosodic domains are formed.

5.1 Background and overview

5.1.1 Syntactic phases

This section provides a brief overview of the notion of the syntactic phase. Since at least Chomsky (1965), there has been the idea that syntactic operations occur as part of a cycle. Rules are applied during the course of a cycle, and once a domain of a certain size has been created, the cycle ends, and then the rules apply recursively to the larger domain. The idea of the cycle has its roots in rule-ordering approaches in phonology, going back to Chomsky et al. (1956). A similar notion of cyclic domains is often assumed in current work within Chomsky's (1995) Minimalist Program (MP). In the MP, syntactic structure-building occurs cyclically, with repeated, recursive applications of an operation called Merge, which combines two syntactic objects. Chomsky (2000, 2001) introduced the notion of the syntactic phase, a notion that is closely related to that of the cycle (see Svenonius 2001 for discussion). We can think of a phase as a cycle—as a unit of time, though Chomsky does not use that metaphor—of syntactic structure-building and movement operations. At a certain point in structure-building, the phase comes to an end, and a syntactic object is sent to the interpretive and phonological interfaces in an operation called *spellout*. As the derivation continues, the same types of syntactic operations (movement, merger of new material) can occur all over again.

These syntactic operations can involve material that is newly-merged to the derivation—"growing" the tree—and to the structure that was built in the previous cycle of syntactic operations. In other words, merge is recursive: the output of merge is the input to further applications of merge. But theorists hypothesize that there are

limits on what sorts of operations can occur on syntactic structure that was created in a previous cycle. This idea was codified as the "Phase Impenetrability Condition" (PIC) from Chomsky (2001), which hypothesized, for example, that agreement operations cannot take place between elements that occur in syntactic structures that were built up in the course of two different phases. We do not need to go into the technical details of the PIC here, but it is worth noting that the PIC and the notion of phase-based spellout led to MP explanations of locality constraints, and analyses of long distance movements as repeated local movements.

What determines the beginning and the ending of a phase? Another way to ask this question is to ask, at what point can a cycle of structure-building operations end and then begin again? Certain functional heads are standardly considered to have the property of determining that a phase is at an end. These heads are v (or $voice$—whichever head in the system serves to introduce the external argument), C^0, and (for many) D^0. The definitional property of a phase head is the triggering of spellout, which is often described as the moment at which a syntactic object is sent to the phonological and interpretive interfaces. But which parts of the syntactic structure that was built up during the phase does the phase head send to the interfaces? This question is still subject to some debate. The standard assumption is that the structure in the complement of the phase head is what is sent to spellout, and I will argue in this chapter that this is the definition of spellout domain that the syntax-phonology interface demands.

Not every instance of $v/voice$ has the property of triggering spellout, and this led Chomsky (2000) to introduce some confusing terminology. Phase heads that initiate spellout are called "strong" phase heads, and these are symbolized with an

asterisk (e.g. v^* or, in the current system, *voice**), and phase heads that do not trigger spellout are called "weak" phase heads. It is hard to know what the definitional property of a weak phase head is, since a weak phase head does not end a phase. I will therefore not distinguish between weak phase heads and non-phasal heads. But as I have noted in Chapter 3, for clarity I will annotate the version of *v/voice* that does *not* trigger spellout as *voice⁻*.

Another important property of phase heads is standardly assumed, though this property is not a necessary one. This property is formalized as an EPP feature, the requirement that the specifier of the head be filled. On the analyses I present here, I will stipulate that (strong) phase heads have an EPP feature. Note however, that a head can have an EPP feature but not be a phase head (T^0 is one example).

The material that is merged to the specifier of a phase head can be new to the derivation (external merge), or it can be material that moves up from a lower position in the phase (internal merge). The specifier of a phase head is referred to as the phase "edge", and it serves as a landing spot for successive cyclic movement out of a phase.[4] The specifier of a phase head is informally called an "escape hatch." Escape hatches are important, because, following the PIC, once spellout has occurred, no syntactic operations can occur inside the chunk of syntactic structure that been phonologically and semantically interpreted.

The analysis presented in Chapter 3 follows many others in the hypothesis that the *v/voice* head that occurs in unaccusative sentences is not a strong phase (Chomsky 2000, 2001; Harves 2002). This line of research sometimes refers to the *v/voice* head as "weak" or "defective". Contra this line of research, some have

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[4]Strictly speaking, it does not make much sense to speak of a *phase* as having an edge: it is really the syntactic structure that is built up during a phase that can be said to have "edge".

claimed that *v/voice* is a strong phase head all the time—even in unaccusative sentences. This claim was put forward by Legate (2003), based on facts having to do with reconstruction. These claims have been countered by Chomsky (2005), den Dikken (2006), and Legate (2012).[5] I have argued that *v/voice* in some unaccusative sentences is indeed strongly phasal, and we will see that this property has consequences at the syntax-prosody interface.

5.1.2 Broad focus, "default stress," and all-new sentences

There has been considerable confusion about "broad focus" sentences and the controversial notion that some sentences reveal *default* prosody. As defined by Kratzer and Selkirk (2010) and Selkirk (2011), sentences that are all-new to a discourse reveal the default pattern of phrasal stress prominence in a language (Selkirk, 2011: 471). An all-new sentence is defined as one in which none of the elements in it are *given*, and none are *focused*. It should be noted that all-new sentences occur very rarely in ordinary discourse. This fact may be obvious to those familiar with research on topichood and discourse cohesion, but it is perhaps not as readily acknowledged in the syntax-prosody literature as it should be. However, the rarity of all-new sentences is orthogonal to the arguments that these sentences reveal default prominence (Selkirk 2008; Kratzer and Selkirk 2010). The goal of what follows is to briefly define the terms *given* and *focus* in order to clarify the notion of default prosody.

As is well-known, the properties of focus and givenness play an important role in the prosody of sentences in languages like English (Kratzer and Selkirk, 2007: 97). Very generally, a constituent is considered "given" if it has been previously men-

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[5]See also discussion in Gallego (2010).

tioned or is assumed to be familiar in the discourse. This idea goes back to work by Chafe (1976). Krifka (2007: 37) defines givenness in terms of presence "in the immediate CG [common ground] content," where presence in the CG can be a matter of degree. This latter aspect of the definition allows us to differentiate among types of given elements. We saw these notions at work in Chapter 4 in the "familiarity taxonomy" of Prince (1981), which makes sub-distinctions within the category of given. The relationship between givenness and prosody is interesting because in many languages, given elements are often de-accented, although not all given elements undergo deaccenting (Terken and Hirschberg, 1994). The phenomenon of deaccenting is the source of much research—see, for example, Schwarzschild (1999) and Féry and Samek-Lodovici (2006), to name just two of the foundational works on this topic; more recently, see Wagner (In press).

Elements in a sentence that are prosodically prominent are said to be focused. Krifka (2007: 18) gives a definition of focus that is widely accepted: "Focus indicates the presence of alternatives that are relevant for the interpretation of linguistic expressions." This definition is based largely on the insights of Rooth (1985, 1992). As Krifka points out, this definition does not say anything about how focus gets expressed in a language. It also does not say whether focus-marking leads to prosodic accenting, or whether accenting leads to a focus interpretation (see Ladd 2008 for discussion). In English, focus is associated with the presence of a pitch accent. As with givenness, there are distinctions made among types of focus. One type of focus can occur in the answer to a wh- question. Example (222) illustrates a type of "information focus" sometimes called *narrow focus*. More specifically, (222) can be called *narrow subject focus* since the element in the answer that corresponds to the

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wh- word in the question is a subject. Focus on a constituent is standardly indicated with the subscript F.

(222)   Narrow focus

         Q: Who ate the cookies?

         A: [JAMIE]_F ate the cookies.

In terms of alternative semantics, we can think of the question half of a dialogue like (222) as raising the issue of all the possible people who ate the contextually relevant cookies. The answer to this question says that of all those possible cookie eaters, in this case it was Jamie. The question in (222) is called a "narrow focus question" because the set of appropriate answers is limited. A cooperative answer to the question in (222) cannot be a statement about just anything: in a normal discourse, the answer is limited to something like (223), where *X* is the cookie eater (and prosodically accented).

(223)   X ate the cookies.

Narrow focus of the sort illustrated in (222) is contrasted with *broad focus*. The answer to a broad focus question is not limited to those of a certain form. The answer to a broad focus question can be a statement that contains not just new and old information, but one that can consist entirely of new information. Some standard examples of questions that have broad focus answers are given in (224).

(224)   Broad-focus questions

      a.   What happened?

      b.   What's new?

The whole sentence that occurs as the answer to a broad focus question is said to be "in focus," and this holds regardless of the information status of the subparts of that sentence. This is why the entire answer to a broad focus question is indicated with F-marking.

      The notion of broad focus must therefore be distinguished from the information status category, *all-new*: just because the answer to a broad focus question *can* be all-new doesn't mean it *has* to be. For example, consider the exchange in (225):

(225)   Broad focus Q and A

      Q: What's new?

      A: [I just met Jamie's new boyfriend]$_F$

Although the whole answer sentence in (225) is in focus, only part of the sentence consists of new information. The pronoun *I* refers to the speaker, an entity that is given in the CG. In addition, the proper name in the predicate is arguably a type of given entity, since speakers rarely use proper names unless the referent is part of the CG, or "conceptually close by," as Bolinger put it long ago (Bolinger, 1972: 640). Examples like (225) illustrate the fact that focus and givenness are independent notions: a whole sentence can be in focus, while some parts of the sentence are given, and some parts new.

Recent work on these notions has argued for a 3-way distinction in describing the relationship between discourse status and prosodic prominence (Selkirk 2007, 2008; Kratzer and Selkirk 2010): contrastive focus, discourse-new and discourse-given. Selkirk (2007: 133) points out that contrastive focus and discourse new-ness are often mistakenly conflated. Further, she argues that while contrastive focus and givenness are marked by special prosody, discourse-newness reveals "default" prosody.

Theories of sentence prosody like Chomsky and Halle's (1968) Nuclear Stress Rule (NSR) and the more recent phase-based approaches described below are meant to capture what Selkirk calls default prosody. Although much of the literature uses the term "broad focus" or "out of the blue" to describe the types of sentences that this level of prosodic analysis is meant to capture, I will refer to the relevant sentences as "all new". This is because, as we have seen, the term "broad focus" does not accurately describe the types of sentences we are interested in, since a broad focus sentence can have given or even focused constituents in it.

The definition of "new" that is relevant to this chapter is the "brand new, unanchored" category from Prince (1981). The diagram in (226) repeats example (39) from Chapter 4, but it shows just the part of the taxonomy relating to new enti-ties.

(226)   Familiarity taxonomy from Prince (1981: 237), with added examples

New

Brand-New   Unused

                   the sun

Unanchored   Anchored

a hippie   *a hippie I know*
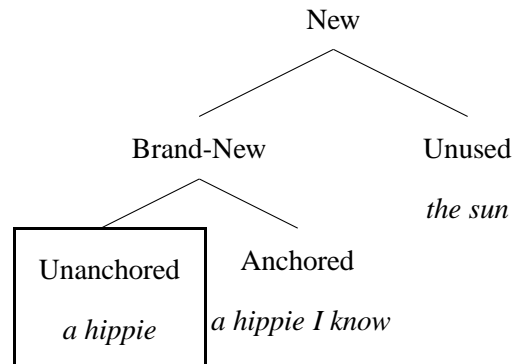
At the end of this chapter, I will return to the prosody of intransitive sentences that have anchored and unused entities.

This section has briefly defined the terms *focus* and *given* in order to define the type of sentence-level prominence that theories like the NSR and the phase-based theory discussed below are meant to capture (Selkirk 2007, 2008; Kratzer and Selkirk 2010). Although Kratzer and Selkirk (2010) use the term "default prosody," I will continue to use the term "all-new," in order to avoid the confusion introduced by the term 'default'. The term *broad focus* has been defined in order to show that a broad focus sentence is not necessarily one that is all-new, despite the fact that *broad focus* and *all-new* are sometimes been used interchangeably.

5.1.3 Overview of the analysis

The analysis presented below is based on a phase-based approach to the formation of prosodic domains (Kahnemuyipour 2004, 2009; Kratzer and Selkirk 2007). The analysis most closely follows that of Kratzer and Selkirk (2007), and it relies crucially on the phasal properties of functional heads, in particular *v/voice*, and D^0. In

keeping with much work on the syntax-phonology interface, I assume the prosodic hierarchy shown in Table 5.1, from Selkirk (2011).

Intonational phrase (ι)
Phonological phrase (φ)
Prosodic word (ω)
foot (ft)
syllable (σ)

Table 5.1: Prosodic hierarchy (Selkirk, 2011: 439)

The level of representation that is relevant to accent assignment in all-new sentences is the Phonological Phrase (φ). This level of the hierarchy corresponds to what Kratzer and Selkirk (2007) and others refer to as the prosodic Major Phrase (MaP). The MaP category is sometimes assumed as a subcategory of φ-phrase by those who implement a more fine-grained hierarchy than the one in Table 5.1; these distinctions are not relevant here. Phases determine the distribution of φ-domains such that each spellout domain results in the formation of a φ-domain, with one MaP accent. I will assume that the MaP level is the one that all phase-based approaches to English prosody attempt to capture. Because phases target the MaP level of the prosodic hierarchy, Kratzer and Selkirk (2007: 101) suggest that the type of intonational prominence that phase-based theories intend to capture is properly called "phrase stress" rather than "sentence stress", since the latter term refers to the highest prominence in the sentence, that of the intonational phrase (nuclear stress or tonic accent). For this reason, I will also use "phrase stress" to refer to the level of intonational prominence that is intended to be captured by phase-based approaches like the

ones discussed here. Terminologically, *phrase stress* is more in keeping with the vast amount of literature that refers to phenomena like "sentence stress" [6]

Much earlier work on the syntax-phonology interface assumed what was called the "strict layer hypothesis" with respect to the categories assumed to be in the prosodic hierarchy (Selkirk 1981, and following; Nespor and Vogel (1986); Beckman and Pierrehumbert (1986), among many others). This hypothesis held that any prosodic constituent—any of the levels shown in 5.1, for example—must have all the other levels represented below it, and in the order indicated; this was the requirement that no levels be skipped (exhaustivity). In addition, no levels could be repeated. This part of the hypothesis ruled out the possibility of recursive phonological representations (non-recursivity). Ladd (1986) presented an early challenge to the strict layer hypothesis, but only recently has there been broad acceptance of the possibility of recursion in sentence-level prosodic structures, seen in work such as Féry and Herbst (2004), Wagner (2005), Itô and Mester (2012) (and their earlier work) and much other work today, including the analysis proposed here.[7]

Example (227) shows the pronunciation of a simple transitive sentence, and (227a)–(227b) show two possible prosodic groupings that bring about this pronunciation in the current system, where there are three φ-domains, but only two domains for phrase stress.

(227)   The HIPPIES built a FIRE

    a.   (the hippies)$_\varphi$ (built (a fire)$_\varphi$)$_\varphi$

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[6]This use of "stress" is still used despite Bolinger's sensible remark that *stress* and *accent* should be distinguished: "Stress belongs to the lexicon. Accent belongs to the utterance" (Bolinger, 1972: 644). I avoid the term *phrase accent* since this has a specific technical meaning in ToBI (Silverman et al., 1992) and following.

[7]See references in Selkirk (2009: 38–39) and discussion in Selkirk (2011).

b.   ((the hippies)$_\varphi$ built)$_\varphi$ (a fire)$_\varphi$

The verb in the representations in (227a) is shown as part of the lower φ-domain, and in (227b) it is shown as part of the higher φ-domain. The theory here allows for either of these representations. As I discuss in detail below, the type of syntax-phonology mismatch that we see in (227b) has been a persistent challenge for nearly every theory of the syntax-phonology interface.

The approach here leaves open the possibility that functional heads other than *v/voice*, C^0, and D^0 can initiate spellout and result in the formation of a φ-domain; Focus, Topic and functional adverbial heads (Cinque, 1999) are likely phasal. Syntactically, this may be because these heads have the property of introducing new material to the derivation via external merge (Kratzer and Selkirk, 2007: 114). We also know that the presence of these heads often affects the distribution of prosodic prominence in a sentence.[8]

There are several assumptions that are important in the derivation that lead to the constituents shown in (227). These are given in (228), and I will discuss them in more detail throughout this chapter.

(228)   Interface assumptions

      i.   Strong phase heads trigger spellout (and weak ones do not)

      ii. D^0 is a strong phase head (Svenonius, 2004)

      iii.   A spellout domain forms a φ-domain

      iv. φ-domains can be recursive

      v.   There can be only one phrase stress per φ-domain

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[8]See for example Gussenhoven (1983, 2007) and Wagner (2007) for a discussion of the effect of adverbs in intransitive sentences.

vi. The structurally highest stressable phrase in a φ-domain receives phrase stress (Kratzer and Selkirk 2007; see also Kahnemuyipour 2004, 2009)

vii. Function words do not form φ-domains on their own, unless they are focused (Selkirk, 1995)

Let us now see how this system works for unaccusative and unergative sentences. Recall that an all-new unaccusative sentence has the subject-accent pattern, as shown in (229).

(229)   Another VASE broke.

In a phase-based analysis, the main difference between sentence (229) and sentence (227) is the phasal properties of *v/voice*. In (229), weak *v/voice* does not trigger spellout. This means that a syntactic object is not sent to the interfaces at the voiceP layer, and the formation of prosodic domains is delayed until a strong phase head is merged. For now we will abstract away from the claim that D^0 is a strong phase head. For a sentence like (229), then, there is only one relevant phase, resulting in one accent, as shown in (230).

(230)   (Another vase broke)$_\varphi$
         Another VASE broke.

Unaccusative sentences with vPs that denote motion or existence and that involve movement of the SC subject to spec,TP have a similar analysis, as shown in (231). As with (230), the key aspect of this derivation is the merger of the weakly phasal voice$^-$ head. This head does not trigger the spellout of its complement do-

main, so the resulting sentence has only one prosodic domain. The representation in (231) again abstracts away from D^0 as a strong phase head.

(231)   (Some hippies arrived)$_\varphi$

    Some HIPPIES arrived.

Finally, I will argue at the end of this chapter that *there*-insertion sentences like (232) involve strong voice head, *voice**. This may be a somewhat surprising proposal, but we will see that this analysis captures the empirical observation that these sentences have two domains for phrase stress, and it also supports a recent line of research on the determination of strong and weak phase heads proposed by Kučerová (2012b).

(232)   (there arrived)$_\varphi$ (some hippies)$_\varphi$

    There ARRIVED some HIPPIES.

The merger of *voice** results in two spellout domains, since *voice** triggers spellout of the lower domain, and then C^0 results in a higher prosodic domain. I will argue that the verb is associated with the higher prosodic domain. The prosodic grouping and the resulting pronunciation of these sentences is as shown in (232).

Finally, I will claim that unergative sentences have either one or two domains, as shown in (233). This is because the verb may adjoin to a lower prosodic domain or to the higher prosodic domain. The lower domain is available because unergative sentences have *voice**.

(233)   Two possible prosodic groupings for unergative sentences

    a.   ((Some hippies)$_\varphi$ smoked)$_\varphi$ $\Rightarrow$ Some HIPPIES smoked.

    b.   (Some hippies)$_\varphi$ (smoked)$_\varphi$ $\Rightarrow$ Some HIPPIES SMOKED.

The phonology may determine which prosodic domain the verb attaches to. The system here is therefore not one that involves a direct syntax-to-pronunciation mapping. In allowing for a mediating phonological representation, it is more like the system of Kratzer and Selkirk (2007) and Selkirk (2011) and less like that of Wagner (2005), Adger (2003) and Pak (2008) (see Selkirk 2011 for discussion).

The analyses sketched above raise several questions that I will address in the following sections. One question has to do with the fact that some of these prosodic representations result in a mismatch between phonological constituents and standardly-assumed syntactic constituents. This question is a persistent one for all theories of the syntax-phonology interface, as we will see below. Another question has to do with the consequences of recursion for the prosodic domains. This is a question that gets at the heart of the nature of cyclic spellout and derivation by phase.

The next section begins with a historical overview of the problem of the prosody of intransitive sentences, and how notions of "argument structure" got implicated in generalizations about phrase stress and intransitive sentences.

5.2   Stress and accent in intransitive sentences

This section provides a brief historical overview of the problem of stress in intransitive sentences, leading up to the phase-based approach implemented here. It describes how the literature on intransitive exceptions to the NSR led to a generalization

about the role of "argument structure" in the prosody of unergative and unaccusative sentences.

The relationship of syntactic structure to prosody in English has been the topic of considerable discussion. Almost as soon as the NSR was put forward, it became clear that some sentences do not conform to its predictions. Much of this early debate focused on the pronunciation of sentences of the sort that Newman (1946) had first pointed out, shown in (234). The NSR predicts stress on the verb in simple subject-verb clauses, and the stress pattern shown in (234a) does not conform to this prediction.

(234)   Predicate-argument asymmetries from Newman (1946: 197) (glosses added)

    a.   I have INSTRUCTIONS to leave.

       'I am to drop off some instructions'

    b.   I have instructions to LEAVE.

       'I have been instructed to depart'

When *have* takes a noun phrase with a relative clause as its complement, and *instructions* functions as the object of transitive *leave* within that relative clause, people report the intuition that *instructions* is accented (234a). On the other hand, when *instructions* functions as direct object of *have* with a complement clause whose verb is intransitive *leave*, people have the intuition that *leave* is accented.

Examples like these were at the center of a debate between Bresnan (1971), Bolinger (1972), Bresnan (1972), Berman and Szamosi (1972), and Lakoff (1972). Interestingly, the topic of intransitive sentences did not play a large role in this debate—though the accenting of direct objects did. In Newman's original discus-

sion of these sentences, he made the observation that these alternations concern predicate-argument relationships: in (234a), "the noun is the logical object of the verb" (Newman, 1946: 197).

Schmerling (1976) drew upon Newman's insights in her discussion of intransitive exceptions to the NSR. Schmerling (1976) was really the first to discuss the prosody of intransitive sentences in detail, extending the discussion to examples like those in (235). In these sentences, Schmerling and others report the intuition that stress falls on the subject rather than (as the NSR predicts) on the verb.

(235)   NSR exceptions from Schmerling (1976: 21)

     a.   I have to go home—my COUSIN's coming.

     b.   Hey—your COAT's on fire!

     c.   Watch out—there's a CAR coming.

     d.   Waiter, there's a FLY in my soup.

Schmerling (1976) elevated Newman's (1946) generalization to a principle: stress is assigned to arguments over predicates. Schmerling argued that this principle (her "Principle II" of stress assignment) explains stress in both transitive and intransitive sentences in English and other Germanic languages.[9] Schmerling argued that once we have her Principle II of stress assignment, then the subject-accent patterns shown in (235) can be explained if the NP is analyzed as an argument to the verb. Later work on sentence stress draws much from this argument, and Schmerling's observations

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[9]Schmerling's (1976) four principles for sentence stress are paraphrased below:
I. Insignificant items (e.g., pronouns) don't get stress. (75)
II. Stress arguments over predicates. (82)
III. Given several items with equal stress, the last one gets highest prominence. (86)
IV. In a topic-comment structure, both topic and comment get stress. (94)

are central to work by Gussenhoven (1983, 1984), Wagner (2005), and, as noted by Ladd (2008: 246), Bing (1979), and Ladd (1980).

At the time that Schmerling was writing her dissertation and perhaps even when it was published as Schmerling (1976), the unaccusative-unergative distinction was not part of syntactic theory.[10] For Schmerling, 'argument structure' concerned the asymmetry between words that function as predicates and words that function as arguments to those predicates—perhaps in the sense of Montague grammar. On this view, syntactic composition does not play a role. But at a certain point in the literature—and it is not clear exactly when—observations about intransitive exceptions to the NSR turned into a generalization about 'argument structure' in the sense of GB-style transformational grammar. As discussed in Chapter 1, this sense of 'argument structure' referred to the bundling of information that comes with a verb, including the number of NPs it requires, and the semantic interpretation of those NPs; argument structure in the GB-style approach was conceived of as a property of verbs. Combined with the projection principle (the requirement that all information in a verb's subcategorization frame be projected into the syntax), a verb's theta grid has consequences for syntactic structure, since those theta roles determine where in the syntax arguments will be projected. In this theoretical context, then, Schmerling's generalization was taken into mainstream generative syntax as being a generalization about the prosody of sentences with unaccusative vs. unergative "verbs" such that when the verb in the sentence is unaccusative, sentence stress falls on the subject, and when the verb is unergative, stress falls on the verb.

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[10]Although the ideas behind the unaccusativity hypothesis had been discussed by Postal and Perlmutter in the mid-1970s, according to Pullum (1991), Perlmutter's paper, "Impersonal Passives and the Unaccusative Hypothesis" did not come on the scene until 1978.

Selkirk (1984) may have been the bridge in the shift from thinking about the function-argument relation from a purely semantic way to a syntactic way. Selkirk (1984) took a purely syntactic view of what Schmerling (and perhaps Newman) conceived of as function-argument relationships. For Selkirk, the relevant relationships were between constituents in a syntactic phrase structure tree. The opposition between functions and arguments becomes, in Selkirk's (1984) framework, an opposition between syntactic heads (e.g., a V head) and their complements (Selkirk, 1984: 231ff.). The distinction between arguments (e.g., direct objects) and adjuncts (e.g., adjectival modifiers) is a crucial one for the Phrasal Focus Rule in Selkirk (1984) (e.g., p. 207). Nevertheless, Selkirk (1984) does not talk at length about intransitive sentences, and this work does not mention the unergative/unaccusative distinction.[11]

One illustration of the shift in the discussion on stress in intransitives from argument structure in a semantic sense to the unergative/unaccusative distinction occurs in Zubizarreta and Vergnaud's (2006) *Blackwell Companion* chapter on phrasal stress and syntax: "Within the class of intransitives, we find that unaccusatives behave differently from unergatives. In unaccusative structures, NS falls unambiguously on the subject...Similarly ... unergatives (in V-final contexts) allow NS on the subject." They provide the examples in (236):

(236)   Zubizarreta and Vergnaud (2006: example 46)

a.   The MAIL arrived.

b.   The SUN came out.

c.   My BAG has disappeared.

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[11]But see Selkirk (1984: 217–218) for some interesting discussion of Schmerling's data.

In these sentences, *arrive* and *come out* are given as examples of unaccusatives; this assumption is in keeping with the analysis here, in which *arrive* is decomposed into a structure that is identical to the one that *come out* occurs in. Example (236c) suggests that (perfective) aspect does not affect the prosody of the sentence. In §5.4.2, I will consider the possibility that the extra syntactic structure necessitated by the aspectual projection in a sentence like (236c) might affect the syntactic domains that are relevant to prosody.

It is not clear how to import Schmerling's generalization about function-argument asymmetry into current syntactic theory. We have a notion of argument-hood in a syntactic sense, and this notion concerns the well-formedness of a verb phrase when the verb is in a syntactically local relationship with an NP. Often this relationship is formalized in a tree as sisterhood, as we saw in Selkirk (1984) . We also have function-argument relationships in a semantic sense. Although there is often an overlap between the relationship of a verb with its "argument" in the syntactic sense and what we consider to be function and argument in a typed semantics, these two notions do not always overlap—certain types of direct objects like proper names, kinds and quantified NPs can, in a typed semantics, be analyzed as functions, not as arguments. But in terms of syntactic composition, it makes sense to think of phrases like direct objects as being arguments.

5.2.1 Syntactic constituents and prosodic constituents

It has been long been observed that in many cases, phonological phenomena like sentence accent reflect syntactic structure. This idea has been the foundation of theories of the syntax-phonology interface from Chomsky and Halle (1968) through Selkirk

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(1984) and Wagner (2005). One way to model this close relationship between syntax and phonology is by making a close relationship between syntactic constituents and prosodic constituents. Selkirk (1984), for example, worked from the hypothesis that prosodic constituents were formed on the basis of syntactic constituents in X-bar theory. Later work implemented the relationship in constraint-based approaches using two main constraints: $Align_R$-XP/$Align_L$-XP, and Wrap-XP.

Selkirk (1986) is an example of an alignment-based theory, one which was put in terms of McCarthy and Prince's (1993) framework of Generalized Alignment in Selkirk (1995) (Selkirk, 2009). Alignment-based theories implemented the idea that a phonological constituent matched up with a syntactic constituent at either the right or the left edge of the syntactic constituent. In addition, Truckenbrodt (1995, 1999) proposed a constraint called Wrap-XP, which required that phonological constituents be contained in syntactic constituents. The interaction of these constraints brought about the close relationship between syntactic and phonological constituents, and they also allowed for syntax-phonology mismatches, since the constraints were violable.

Selkirk (2009, 2011) critiques the approach based on Align-XP and Wrap-XP, arguing that these constraints predict unattested patterns. She proposes a unified constraint called "Match." This constraint simply calls for a correspondence between syntactic and phonological constituents, as shown in Table 5.2.

Selkirk states that "this set of universal Match constraints calls for the constituent structures of syntax and phonology to correspond; it predicts a strong tendency for phonological domains to mirror syntactic constituents" (Selkirk, 2011: 439–440). It also predicts more recursivity in phonological structure than researchers

Phonological constituent		Syntactic constituent
Intonational phrase (ι)	$\Longleftrightarrow$	clause
Phonological phrase (φ) (aka MaP)	$\Longleftrightarrow$	phrase or XP
Prosodic word (ω)	$\Longleftrightarrow$	"word"
foot (ft)		
syllable (σ)		

Table 5.2: Match clause, Match phrase, Match word (Selkirk, 2011: 439)

previously hypothesized, particularly in light of the strict layer hypothesis, which stipulated that phonological constituents could not be recursive.

In the phase-based approach, the interface units are smaller cyclic chunks rather than larger units that might correspond to the "clause" in the correspondences in Table 5.2. How do we integrate the fundamental insights of Match within a cyclic spellout theory? The most straightforward interpretation involves a matching of *spellout domains* to prosodic constituents. In this way, the matching is more local and not tied to specific XP labels as it is in Table 5.2; it is the consequence of the phasal feature of certain functional heads. Cyclic spellout is by definition recursive, but there different ways of interpreting how this recursion works. We must therefore step back and consider the consequences of recursive spellout domains for the syntax-phonology interface.

5.2.2 Recursion in syntax and prosody

Let us take a simple, standard example of recursion in syntax and consider the consequences of cyclic spellout for the phonological and interpretive interfaces. The tree in (237) shows a recursive syntactic structure.

(237)   the hippie with a daisy
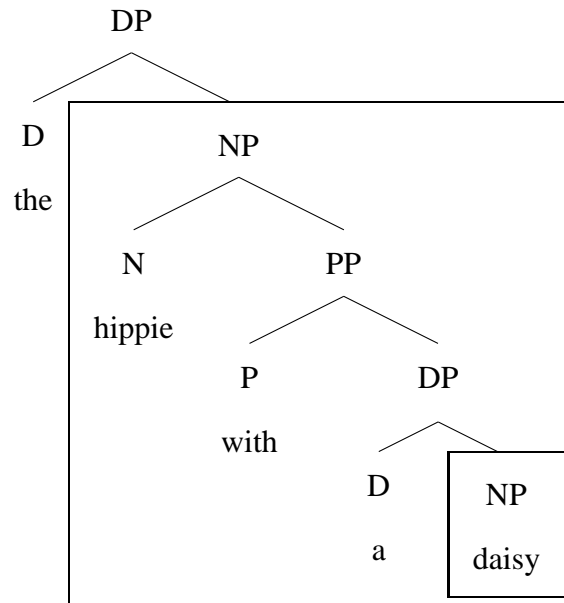
Here we have two examples of recursion, where a syntactic object of one type is contained within a syntactic object of the same type. In this case, we have a DP within a DP, and an NP within an NP. The two NPs have been indicated in (237) to show this relationship.

Now let us consider the consequences of phase-based spellout. If D^0 is a phase head, then the material in its complement domain is marked for spellout once D^0 has projected all its features. In the case of both D heads, the complement domain is an NP, as shown in (237). But now we must consider what it means to be "sent to spellout". What happens to the nested NP in (237) when the higher NP is sent to spellout? In other words, we must decide between two ways of interpreting cyclic spellout, as shown in (238).

(238)   Two ways of implementing cyclic spellout

a.   **Iterative spellout**: Spelled-out material is set aside, chunk by chunk, and then reassembled at the phonological and interpretive interfaces.

b.   **Recursive spellout**: Previously spelled-out material is included within subsequent spellout domains, so that it is, in a sense, re-spelled out each time a containing spellout domain is created.

The position in (238a) might be called the "iterative" approach, with the output of each spellout operation as shown in (239) (where there is a final spellout operation that takes care of the highest element in the tree).

(239)   Iterative spellout

spellout 1: { daisy }

spellout 2: { hippie with a }

spellout 3: { the }

Interface: { the }, { hippie with a }, { daisy }

The interpretation of spellout in (238b) implements a more technical meaning of recursivity, where the output of one operation serves as the input to another operation. This is shown in (240), where the final spellout operation contains all the preceding spellout domains.

(240)   Recursive spellout

spellout 1: { daisy }

spellout 2: { hippie with a { daisy } }

spellout 3: { the { hippie with a { daisy } } }

Interface: { the { hippie with a { daisy } } } (same as spellout 3)

One thing to notice about the interface representation in (239) and the ones in (240) is that both force us to accept mismatches between what are standardly considered to be syntactic constituents (e.g., a determiner and its NP, as in *the hippie*) and the spellout domains. This seems to be an unavoidable fact about phase-based derivation.

Now let us consider the nature of the prosodic constituents that might be formed in each case. In the case of iterative spellout as in (239), the domains would not be nested. Following our interpretation of Match with a phase-based syntax, each constituent in curly braces in (239) would form a prosodic constituent. But let us follow Selkirk (1995) and assume that function words cannot form prosodic domains on their own unless they are focused, and that they must cliticize onto a nearby prosodic word.

The phonological representation of the DP *the hippie with a daisy* resulting from iterative spellout would be as in (241). The representation for recursive spellout would be as in (242).

(241)   Iterative spellout: prosodic domains

(the hippie with a)$_\varphi$ (daisy)$_\varphi$

(242)   Recursive spellout: prosodic domains

(the hippie with a (daisy)$_\varphi$)$_\varphi$

The choice between (241) and (242) is not a simple one; and the choice at the interpretive interface is similarly difficult. Notice that whichever hypothesis about spellout we choose, there is a significant mismatch between spellout domains and

syntactic constituents. Let us pursue the recursive hypothesis and look at this mismatch more closely.

(243)   Constituent differences

     a.   Prosodic: (the hippie with a (daisy)$_\varphi$)$_\varphi$

     b.   Syntactic: [the hippie [with [a daisy]$_{DP}$]$_{PP}$]$_{DP}$

One mismatch is that we standardly consider there to be a constituent boundary before *a* in *a daisy* and before *with* in *with a daisy*. But cyclic spellout results in this material being between phases, so this material ends up being spelled out as part of the higher phase.[12] We might say that, at PF, the indefinite article, as a functional element, cliticizes to the closer, lower phase. To say so would not be unmotivated, but then what happens with *with*? The tree in (244) illustrates this situation.

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[12]This grouping of the article with a following preposition may be reflected in the sort of D+P phonological groupings that we see in many languages, such as French (e.g., *de + le = du*, and *à + les = aux*) and German (*bei + dem = beim*, *in + das = ins*).

(244)   the hippie with a daisy

```
                    DP
                   /  \
                  /    \
                 D      NP
                the    /  \
                      /    \
                     N      PP
                   hippie  /  \
                          /    \
                    ( P )      DP
                    (with)    /  \
                             D    NP
                             a    daisy
```
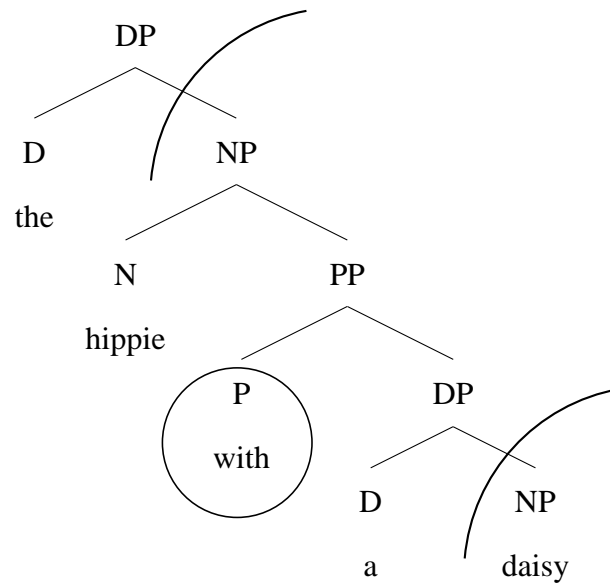
The tree in (245) shows the more general dilemma that holds for any element that is between phases. We will see that this is the situation that the verb faces in English, given standard assumptions about spellout domains.

(245)   Spellout domain pickle

XP
X*
YP
Y   ZP
Z   XP
X*   YP
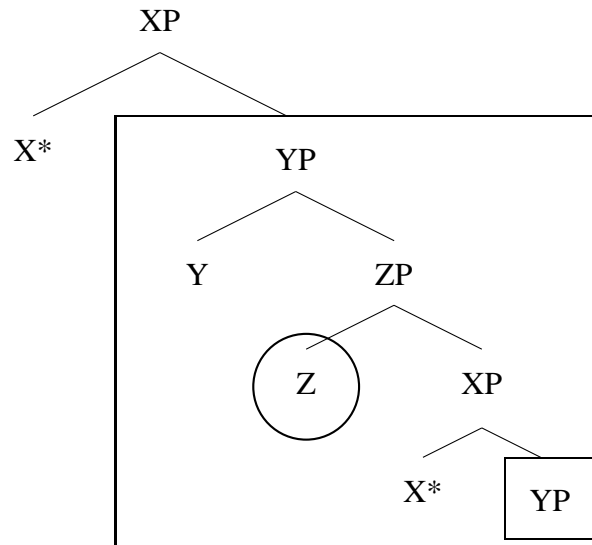
All phase-based approaches to the syntax-prosody interface must answer the question of what to do with material that occurs between spellout domains, and what to do with the constituency mismatches that result from phase-based spellout. In the next section, I discuss some different possible ways to define the spellout domain and examine the resulting consequences for the interfaces. Although some have argued for alterative versions of the definition of the spellout domains, I will show that the standard definition—spellout domain as complement domain of a phase head—is the only viable option, despite the fact that it results in mismatches between syntactic and prosodic constituents.

5.3 Phase-based approaches to spellout

The central hypothesis of a phase-based theory of prosody is that prosody in all-new sentences is the consequence of the phasal composition of a sentence. There are several ways in which this hypothesis can be implemented. In this section, I describe three possible phase-based approaches to all-new prosody. Each approach defines the spellout domain of the phase differently: as the complete phase, as the phase head and complement material, and finally, as the complement of the phase head. I will discuss the strengths and weaknesses of each approach in terms of the phonological domains created and the satisfaction or violation of Selkirk's (2011) Match approach (interpreted here in a phase-based theory). I will argue that the standard theory, one in which the interface unit is the complement of the phase head, is the only approach that can reasonably be implemented. Recall that in the derivations below, the external argument introducing head *voice** should be considered equivalent to the head in a Chomskyan system that serves the same function, *v**.

5.3.1 A simplest phase-based theory

One straightforward hypothesis of prosodic spellout would hold that the interface unit is the complete syntactic structure that is constructed during a phase. In other words, the spellout domain of a phase is the complete XP, where X is a phase head, and this XP is parsed as a phonological phrase. This approach takes quite literally the idea that the syntactic phase is the interface unit of the grammar.

(246)   *Simplest phase-based hypothesis*

　　　　The complete phase constitutes the spellout domain

Let us consider this hypothesis with respect to the derivation in (247). This derivation shows the DP *a fire* as already spelled out, following the hypothesis that D^0 is a phase head.

(247) voice*P for *The hippies built a fire*
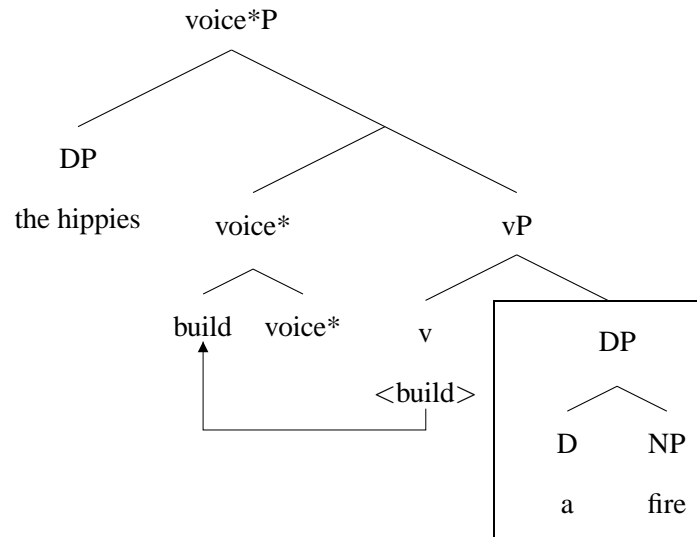
When spellout of the voice*P occurs, the resulting prosodic domains are shown in (248).

(248) Prosodic domains and syntactic constituents on the simplest hypothesis

a. ((the hippies)$_\varphi$ build (a fire)$_\varphi$)$_\varphi$

b. [[the hippies] build [a fire]$_{DP}$]$_{voiceP}$

The spellout domains resulting from the simplest hypothesis have the advantage of satisfying Match completely, as we see in (248). This theory is what Fuß (2003) argues for, based on Complementizer agreement of T and C in Germanic. But it suffers from some fatal drawbacks: first, the subject *the hippies* is spelled out before

it can move to its usual position at spec,TP (where it satisfies T^0's EPP feature). Next, the verb is spelled out before it can receive any Tense information. The latter problem arises whether the verb is inserted into the derivation fully inflected—since these features must be checked by Tense—or whether the verb needs to receive Tense features in order to be pronounced. Finally, by defining the spellout domain such that the complete vP is spelled out, the phase no longer has an "escape hatch". This means that the question *What did the hippies build?* could not be generated, because even if the wh- word could move to Spec,voice*P, it would still be spelled out before it could raise further. The verb is similarly trapped—it cannot move if it needs to, as it does in English with main verb BE.

5.3.2 A simpler phase-based theory

We might modify the simplest hypothesis such that the domain for prosodic spellout does not include any specifiers of the phase head. This view is in keeping with the need for phases to have escape hatches for movement. But we will see that this modification of the hypothesis does not solve the problem of the verb getting tense, despite the fact that the representation satisfies Match.

(249)   *Simpler phase-based hypothesis*

       The phase head and complement constitute the spellout domain.

In the example sentence that we have been working with, then, the spellout domains would be as indicated in (250). (The spellout domain for the DP has not changed, since this DP does not have a specifier.)

(250)   Spellout domains on the simpler phase-based hypothesis
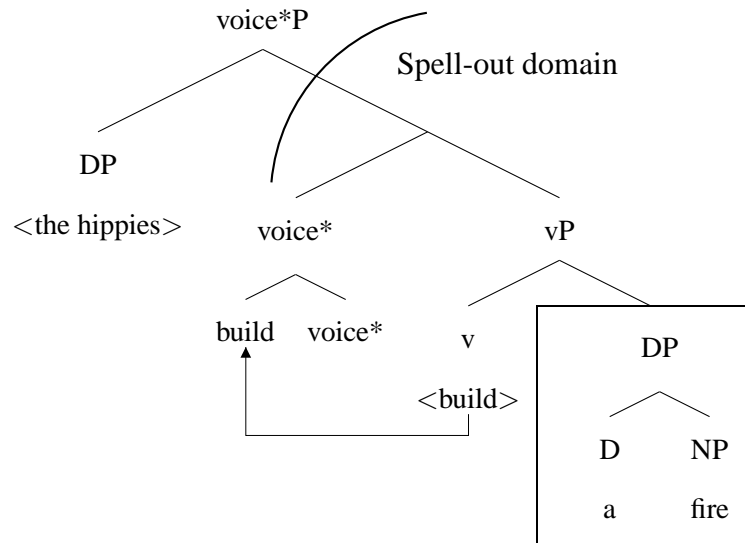
  This approach has the advantage of allowing for wh-movement out of the phase. For example, if the direct object DP here were a wh-word, this constituent would move to Spec,voice*P (creating a second specifier), and then continue along its successive cyclic way. This approach also ends up satisfying Match in that the "verb"—seen as the v+voice* complex—and the direct object DP constitute a prosodic constituent.

(251)   Prosodic domains and syntactic constituents on the simpler hypothesis

   a.   (build (a fire)$_\varphi$)$_\varphi$

   b.   [build [a fire]$_{DP}$]$_{voiceP}$

But the drawback of defining the spellout domain in this way is that the verb is still spelled out before it can get tense information, and verbs that need to escape voiceP via head-movement are trapped.

5.3.3   The standard phase-based theory

Problems like the ones described above led to what I call here the "standard" hypothesis, which is that when a phase head triggers spellout, the syntactic material in the complement of that head is sent to the interfaces. This hypothesis is the one that Kahnemuyipour (2004, 2009) and Kratzer and Selkirk (2007) pursue, and it is the one that I implement in the analysis here.

(252)   *The standard phase-based hypothesis*

The spellout domain of a phase is the complement of the phase head.

On this hypothesis, the verb is not spelled out at all as part of the voice*P phase, and it is not sent to spellout until the material in the next-higher-up phase is sent to spellout.

The advantages of defining the spellout domain as in (252) should be clear: it allows for a structural escape hatch, since any specifiers of the phase head are not part of the spellout domain; the verb, assuming v-to-voice movement, escapes the lower spellout domain such that it will end up in the same phase as T^0 and will thus be able to meet its requirement for tense. The relevant spellout domain is shown in (253) for our example sentence.

(253)   Spellout domain is the complement of voice*
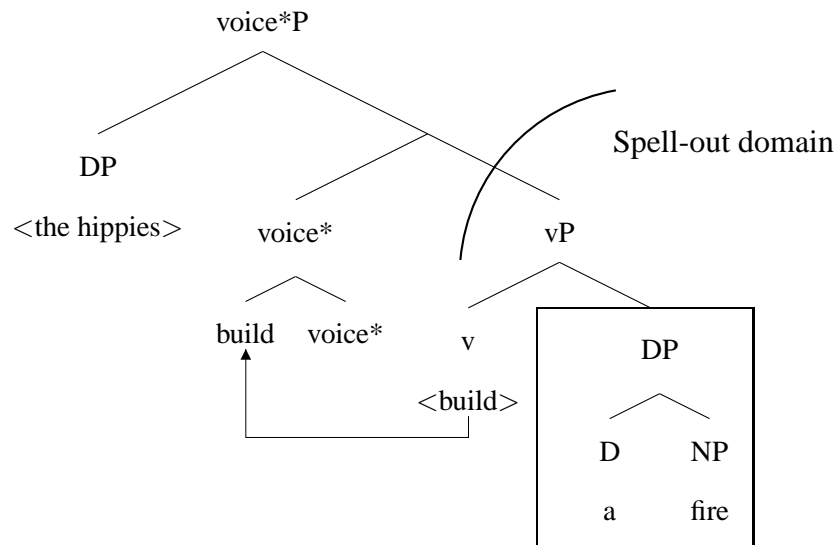
But these advantages come at the cost of a mismatch between prosodic constituents and syntactic constituents such that the verb is not in the same spellout domain as the direct object. This is shown in (254), where the verb is spelled out in the same phase as the subject (254a). This grouping goes against the syntactic embedding of the direct object within the voiceP, as well as the standard, pre-theoretical assumption that the verb and its direct object form a syntactic constituent, illustrated in (254b).

(254)   Constituency mismatches on the standard hypothesis

　　a.   ((the hippies)$_\varphi$ **built**)$_\varphi$ (a fire)$_\varphi$)$_\varphi$

　　b.   [the hippies]$_{DP}$ **[built** [a fire]$_{DP}$]$_{voiceP}$

Let us now look at the derivation in (253) a bit more carefully, since it illustrates the elements of my analysis of phase-based spellout and the consequences for prosodic and syntactic constituency.

5.4   Returning to the analysis

The first thing to consider in this analysis is the consequence of D^0 as a strong phase head. As noted above, if D^0 is a phase head, then by the time a derivation reaches voice*, some parts of the tree will already have been spelled out. In (253), this means the NPs *fire* and *hippies*. These NPs therefore become prosodic phrases, and the material in D^0 is not spelled out until the structure formed during the next higher phase is spelled out.

(255) D^0 as strong phase head

$\Rightarrow$ (hippies)$_\varphi$
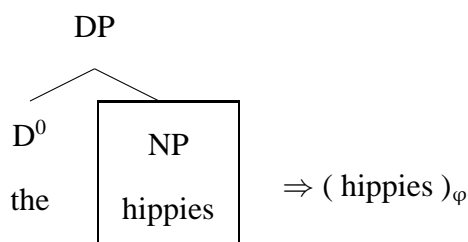
When the next spellout occurs, the D^0 head is spelled out, along with the previously spelled out NP that it contains. As we saw in §5.2.2, the functional item (in this case, the determiner *the*) is caught between phases, and as a function word it is also not standardly considered able to form a prosodic word on its own (Selkirk, 1995).

This means that, in the phonology, the material in D^0 must cliticize to either the preceding prosodic phrase or the following one. Let us assume that for simplicity that a regrouping operation occurs in the phonology as shown in (256).

(256)   (…the (hippies)$_\varphi$)$_\varphi$ $\Longrightarrow$ (the hippies)$_\varphi$

But let us not forget that the situation with D^0 in (256) mirrors that of the verb.

The derivation in (253) continues as shown in (257), where spellout domains are indicated by the boxed material in the DP, and by arcs showing complement domains. First, T^0 is merged, and then C^0, the next phase head, is merged. According to standard assumptions about the nature of Tense, C transfers certain features to T^0, and this results in T having the EPP feature that attracts the subject to spec,TP.[13]

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[13]This moment might seem counter-cyclic, but from the perspective of phase theory it is not, since these actions all happen within the same phase.

(257)   Spellout domains in *The hippies built a fire*
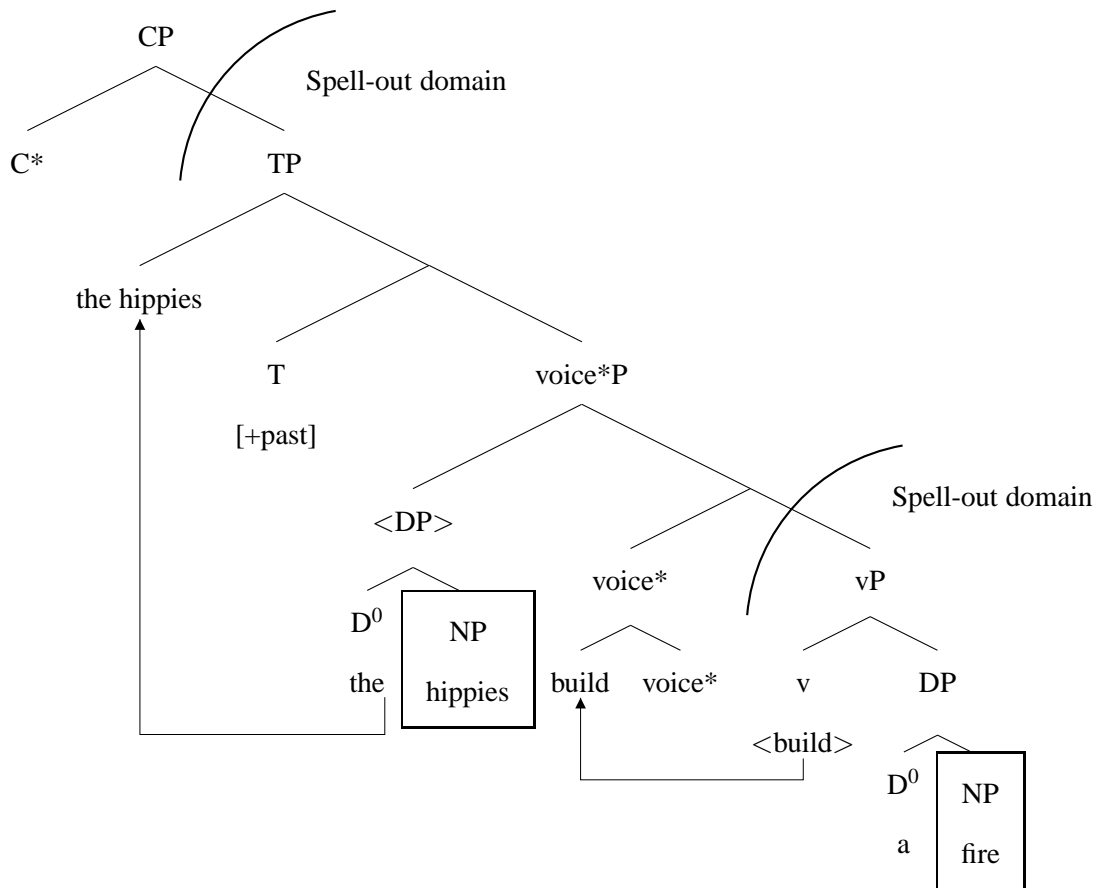
Since C^0 is a strong phase head, the material in its complement domain is sent to spellout. The only pronounceable material in this spellout domain is the external argument and the verb. There is one last operation of spellout that ends the derivation.

Let us assume for simplicity that D^0 cliticizes to the NP spellout domain as in (255). Then the spellout at C^0 will consist of D^0 and its previously spelled out material (the NP *hippies*), as well as the previously spelled out material from the voice*P. This is shown in (258), where the whole sentence is shown as a recursive phonological phrase.

(258)   Prosodic domains on a recursive standard hypothesis

((the hippies)$_\varphi$ built (a fire)$_\varphi$)$_\varphi$

Notice that if we assume recursive spellout, then, as we see in (258), the verb is part of a prosodic domain but not parsed as a phonological phrase itself. In a sense, it is stranded. I suggest that the consequence of this representation is that the verb will join either the higher or the lower phonological domain, in a kind of adjunction. In either case, it does not get parsed as its own phonological phrase, and it does not receive phrase stress. The phonological representation may therefore be either (259a) or (259b); this is determined in the phonology, not the syntax.

(259)   The HIPPIES built a FIRE

a.   ((the hippies)$_\varphi$ built)$_\varphi$ (a fire)$_\varphi$

b.   (the hippies)$_\varphi$ (built (a fire)$_\varphi$)$_\varphi$

In either case, there are two prosodic domains, with accents as shown in (259).

5.4.1   Intransitive sentences and prosodic domains

We now turn to the prosody of intransitive sentences. Recall that both change-of-state and motion/existence unaccusative structures are hypothesized to have a weakly phasal voice head, one that does not trigger spellout. This results in just one prosodic domain, on the assumptions made here. Consider the derivation in (260).

(260)   Spellout domains in *Another vase broke.*
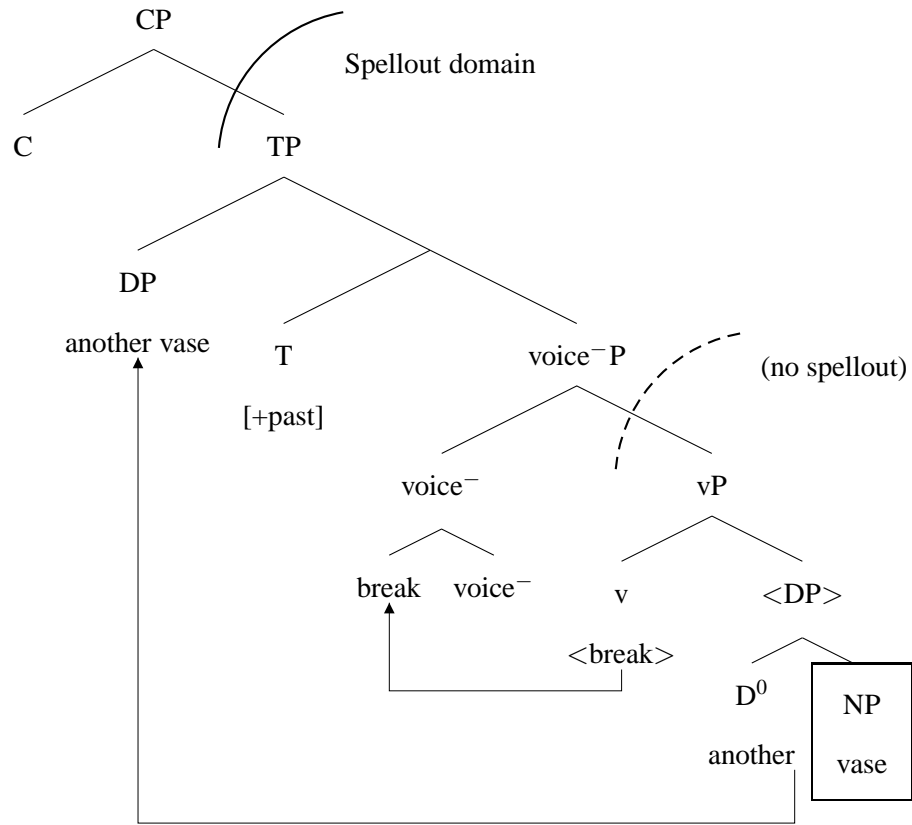
We can now see that this structure produces the phonological phrases in (230), repeated below as (261).

(261)   ((Another vase)$_\varphi$ broke)$_\varphi$

Just as we saw above, the verb in (261) is effectively adjoined to the larger prosodic domain, and we end up with a single domain, since there is no lower domain for the verb to join. Following the hypothesis that the highest phrase in a spellout do-

main receives an accent (Kahnemuyipour 2004, 2009; Kratzer and Selkirk 2007), the resulting representation is as in (262).

(262)   ((Another vase)$_\varphi$ broke)$_\varphi$ $\Rightarrow$ Another VASE broke.

The derivation of motion/existence unaccusative sentences is essentially identical to the derivation in (260), as I show in (263).

(263)   Spellout domains in *Some hippies arrived.*
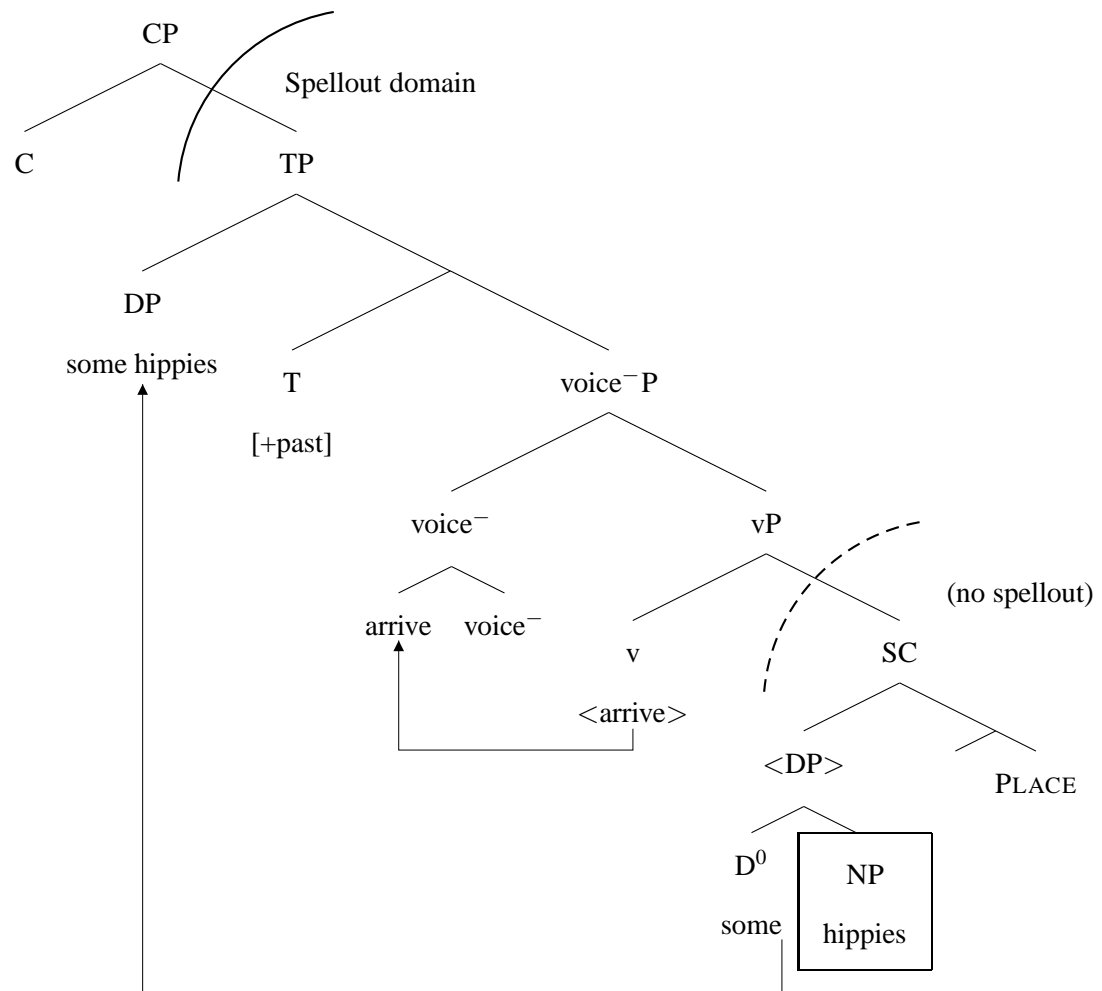
We now turn to the prosody of unergative sentences. Recall that all-new unergative sentences can be pronounced with either the one-domain pattern or the two-domain pattern, as shown in (233), repeated below as (264).

(264)   Two possible prosodic groupings for unergative sentences

   a.   ((Some hippies)$_\varphi$ smoked)$_\varphi$ $\Rightarrow$ Some HIPPIES smoked.

   b.   (Some hippies)$_\varphi$ (smoked)$_\varphi$ $\Rightarrow$ Some HIPPIES SMOKED.

Although I remain neutral on the precise account of the unergative vP-internal structure, it is uncontroversial that unergative sentences have external arguments and therefore strong voice. We can now see that when a structure has two strong phase heads (aside from D^0)—namely, voice* and C^0, the verb exists between spellout domains. And, as I claimed above, the verb can join either prosodic domain. I propose that the same process happens in unergative sentences.

(265)   *Some hippies smoked.*
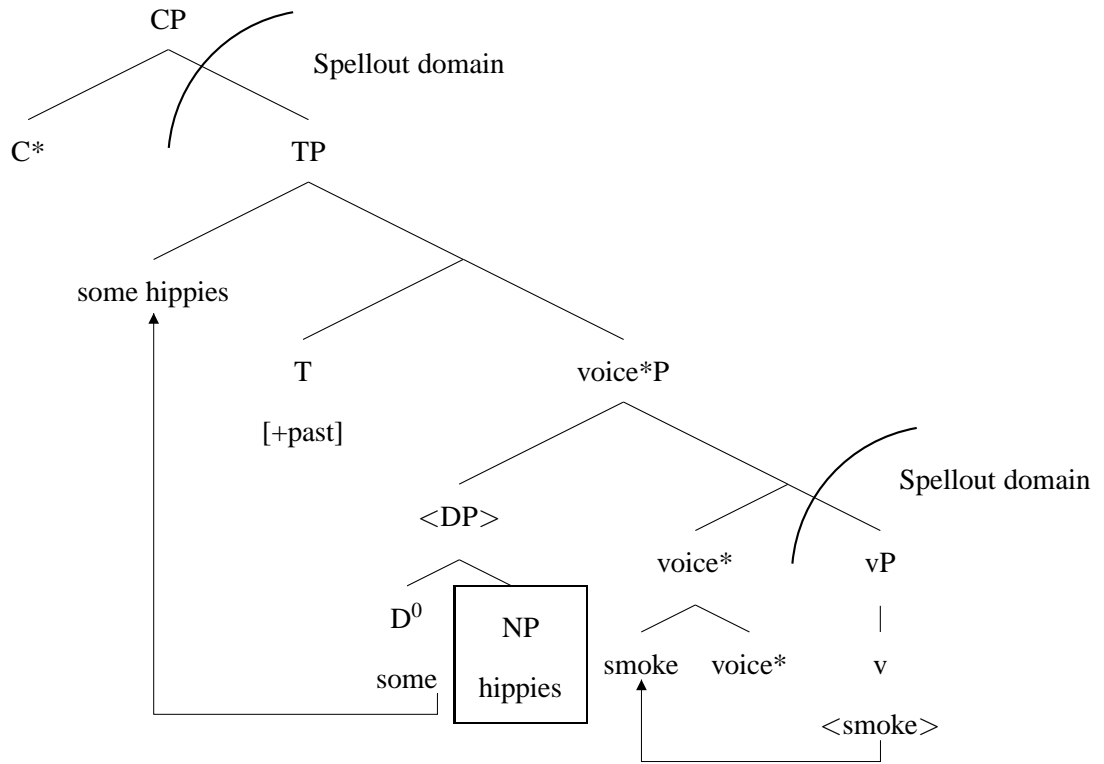
Notice the challenge that this derivation presents: the first phase of the deriva-tion contains only the unpronounced copy of the verb. I propose that spellout simply happens as usual, and an empty prosodic domain is formed. The final recursive prosodic domains are as shown in (266).

(266)   ((some hippies)$_\varphi$ smoked ( )$_\varphi$)$_\varphi$

Note the similarity of (266) with (258). In the phonology, this output from the syntax will result in either the subject accent pattern or the two-domain pattern, as shown in

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(267). The subject accent pattern is shown in (267a), and the two-domain pattern is shown in (267b).

(267) a. ((some hippies)$_\varphi$ smoked ( )$_\varphi$)$_\varphi$ ⇒ ((some hippies)$_\varphi$ smoked)$_\varphi$

  b. ((some hippies)$_\varphi$ smoked ( )$_\varphi$)$_\varphi$ ⇒ (some hippies)$_\varphi$ (smoked)$_\varphi$

Although historically, unaccusative sentences have been seen as the problem child of the syntax-prosody interface, deriving the two-domain pattern for unergative sentences has emerged as the real challenge. Deriving the prosody of unergative sentences led Kahnemuyipour (2004) to claim that the spellout of a (basically) empty domain is a marked operation. In the event that this might happen, as in (265), the closest pronounceable constituent is grabbed and sent to spellout. This means that the lower spellout domain in a sense "reaches up" or extends itself to include the verb.

(268) Spellout domain extension (Kahnemuyipour, 2004)

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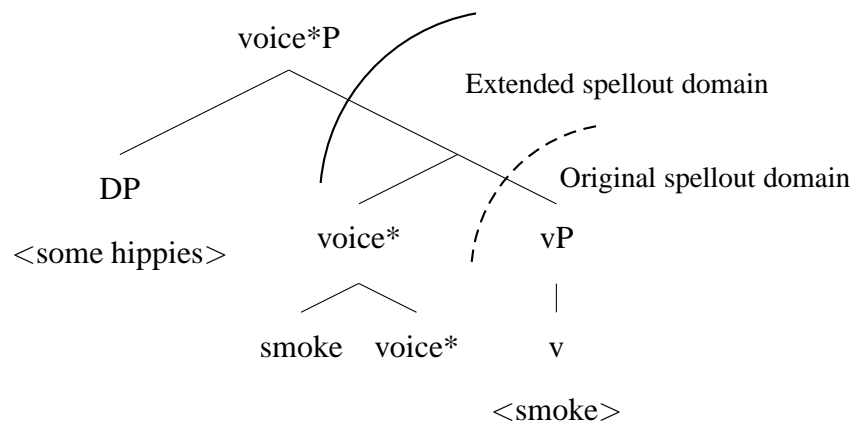
But we now see how Kahnemuyipour's solution, as shown in (268), cannot work, since it prevents the verb from being in a domain with T.

Kratzer and Selkirk's (2007) solution is similar. They state that "verb stress is in some sense the elsewhere case for prosodic spellout: if within the spellout domain there is no phrase available to spell out as a major phrase, then the head gets prosodically spelled out" (Kratzer and Selkirk, 2007: 110). They formulate this "elsewhere condition" as in (269).

(269)   The Elsewhere Condition on prosodic spellout (Kratzer and Selkirk, 2007: 110)

A spellout domain with eligible material must contain a major phrase.

The stipulation in (269) works because Kratzer and Selkirk's (2007) system does not involve v-to-voice movement, so the lower domain is not spelled out.[14]

5.4.1.1   Unergative sentences and topicalization

There are some all-new intransitive sentences that likely have external arguments but that never seem to have the two-domain prosodic pattern. For example, consider the following dialogue.

(270)   A: What happened last night?

B: The BABY cried.

B′: ??The BABY CRIED.

---

[14]In their system, the verb is a bad candidate for phrase stress because phrase stress requires a full XP.

(271)   A: What happened while I was out?

         B: The PLUMBER called.

         B′: ??The PLUMBER CALLED.

Many have the judgment that the prosody indicated in B is the default one for an out-of-the-blue situation, as we have in (270) and (271); for such speakers, the B′ answer seems marked. I will argue that the preference for the prosody in B over B′ comes about because the subject of the sentence is topicalized.

In these dialogues, notice that both answers contain definite determiners. In fact, the answer to the questions in (270) and (271) would be unusual if they contained indefinite determiners, as shown, with my judgments, in (272) and (273).

(272)   A: What happened last night?
         B: #A baby cried.

(273)   A: What happened while I was out?
         B: #A plumber called.

We know from the corpus study discussed in Chapter 4 that sentences like the answer in (272) rarely occur in English. I argued that when such sentences do occur, they introduce events and serve as scene-setting sentences. But the fact that the answer in (270) contains a definite determiner adds to the mystery. Let us assume that speaker B in (270) uses *the baby* because there is a contextually salient baby that he or she assumes speaker A is familiar with. If that is the case, then why is *the baby* not deaccented? This may be because although the referent of *the baby* may be familiar to both speaker and hearer, the baby has not been previously mentioned

in the current conversation. B's answer in (270) serves to create a new topic with *the baby*. Syntactically, this constituent moves to the specifier of TopP. If Top^0 is a strong phase head, then an extra domain for phrase stress is created. Although it is difficult to find evidence in English for string-vacuous movement to spec,TopicP, it may be that other Germanic languages have better diagnostics. For further discussion of the prosodic consequences of topicalization in unergative sentences, see Kratzer and Selkirk (2007: 118ff).

5.4.2 The prosody of unaccusative *there*-insertion sentences

This section addresses the prosody of unaccusative *there*-insertion sentences, and it argues that these sentences have two domains for accent assignment, just as transitive sentences do. Little has been written about the prosody of *there*-insertion sentences (to my knowledge), but their prosody is interesting because it reveals some intriguing properties about the formation of strong and weak phases.

An all-new *there*-insertion sentence has two domains for stress, as shown, with my judgments, in (274).[15] Note that the pattern in (274) differs from the one that we have discussed with respect to sentences with *arrive* that do not have *there*-insertion, shown in (275) for comparison.[16]

(274)   There ARRIVED some HIPPIES.   (2 domains)

(275)   Some HIPPIES arrived.   (1 domain)

---

[15]*There*-insertion sentences were not included in the stimuli in the experiment described in Irwin (2011).

[16]Although *there*-insertion sentences with BE also appear to have two domains for accent assignment (e.g., *There's a FLY in my SOUP*) I restrict the claims in this section to non-BE *there*-insertion sentences, since BE has properties that need special consideration.

In a phase-based approach, the two-accent pattern in (274) can only come about when the sentence has two strong phase heads, resulting in two spellout domains, each with a MaP accent. How is it that (274) has two spellout domains, but (275) has only one spellout domain? I propose that the pattern in (274) results from the merger of a strong voice head, *voice** rather than the type of voice we have in (275), *voice⁻*. This analysis highlights a notion that I have been arguing for throughout this dissertation, that unaccusativity is a property of the syntactic structures that verbal roots occur in, and not a property of "verbs" themselves. This analysis also draws on Kučerová's (2012) work on the relationship between case domains and spellout domains; on Kučerová's analysis, these matters are directly related to pronounceability and the PF interface.

To begin, recall the tree for an unaccusative sentence with *arrive* and no *there*-insertion, (263), repeated below as (276). On my analysis, PLACE is predicated of the SC subject, and *there* is always merged as a modifier of PLACE (though it is not always pronounced). The tree shows the prosodic domains that are formed when the SC subject moves to satisfy the subject requirement of T^0.

(276) Prosodic domains in an unaccusative sentence: *Some hippies arrived.*
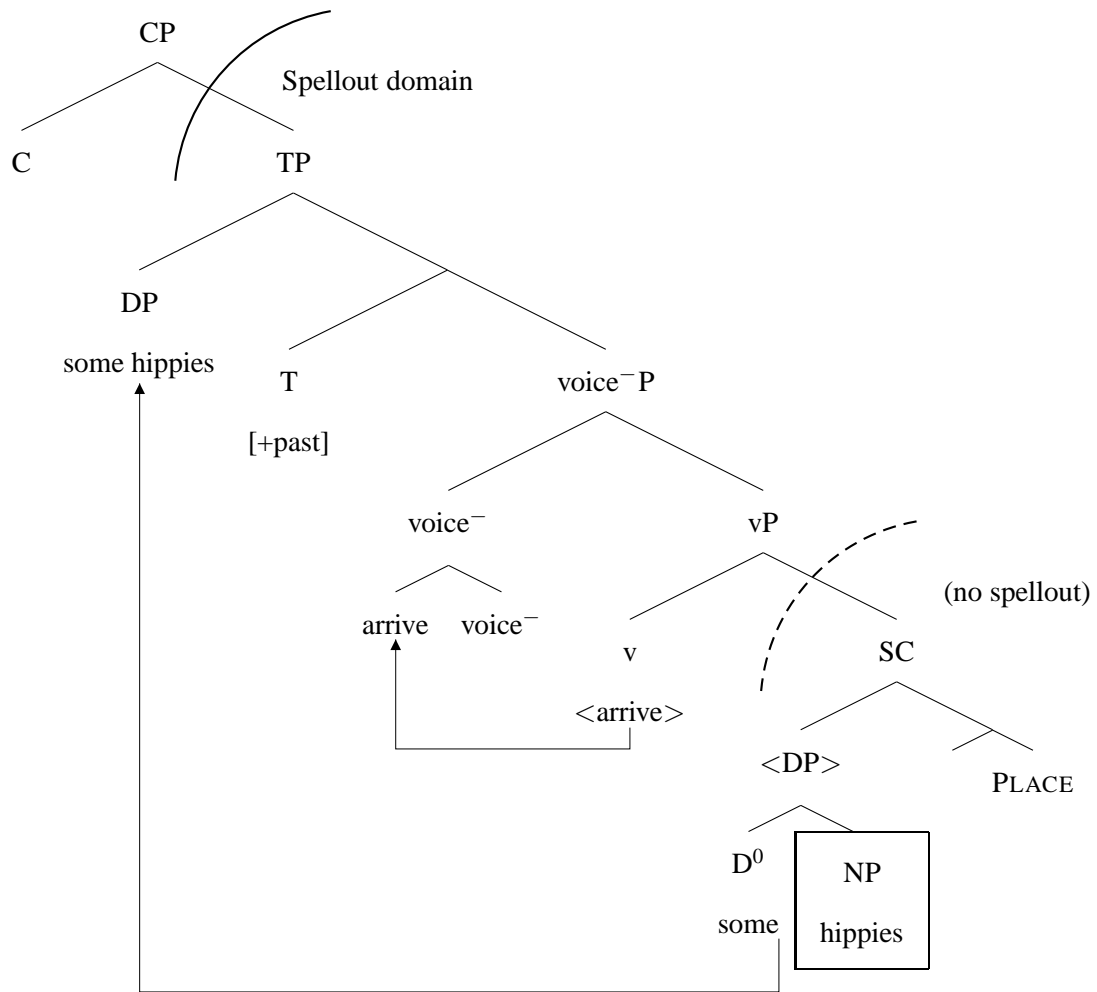
A *there*-insertion sentence comes about when strong voice (*voice**) is merged. The merger of this head comes at a cost, however. Strong voice can be merged only when *v* agrees with (and thereby licenses) the direct object, but *voice** also carries with it the requirement for additional structure to be merged above. In this case, that additional structure is a specifier. Since the DP is licensed in-situ, the DP does not move to satisfy this requirement of *voice**. Instead, *there* moves to spec,voice*P. At

this point, the relevant features of *voice** are satisfied, and its complement domain can be sent to spellout (though, as we have noted, spellout is somewhat delayed for reasons having to do with Tense). This derivation up to voice*P is shown in (277), and this derivation shows that the vP-internal DP *some hippies* will be parsed as a MaP.

(277)   vP for *There arrived some hippies.*

voice*P

there

Spellout domain

voice*

vP

arrive   voice*

v

SC

<arrive>

DP

some hippies

PLACE   *there*
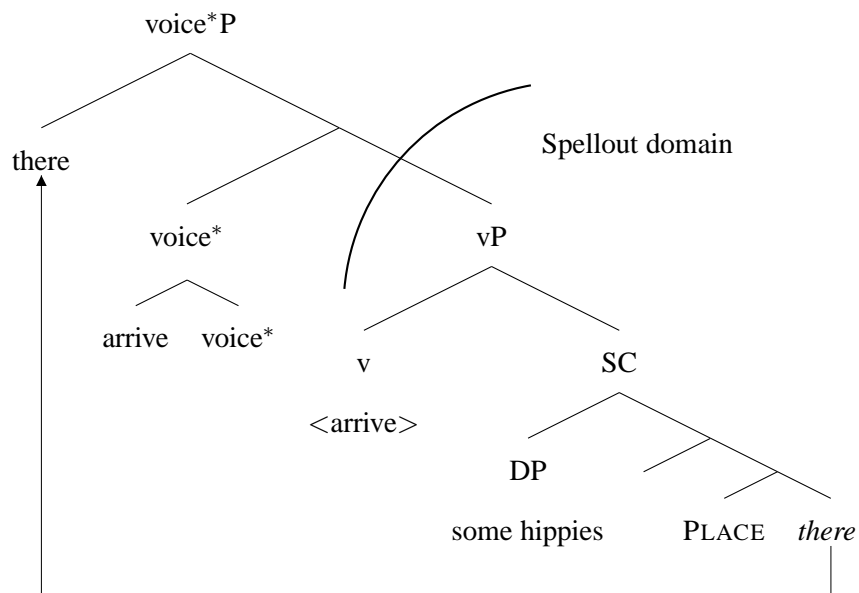
As the derivation proceeds, *there* moves to spec,TP, to satisfy the subject requirement of T^0, and the next strong phase head is C^0. The complete derivation with spellout domains is shown in (278).

(278)   Prosodic domains in *There arrived some hippies.*

```
        CP
       /  \              ⇒ spellout: there (arrived)_MAP
      /    \
     C      TP
           /  \
      there    \
         /      \
        T      voice*P
              /      \
        <there>       \
             /         \    ⇒ spellout: (some hippies)_MAP
         voice*        vP
         /   \        /   \
     arrive voice*   v     SC
                 <arrive>  / \
                         DP   \
                              / \
                    some hippies \
                            PLACE  <there>
```
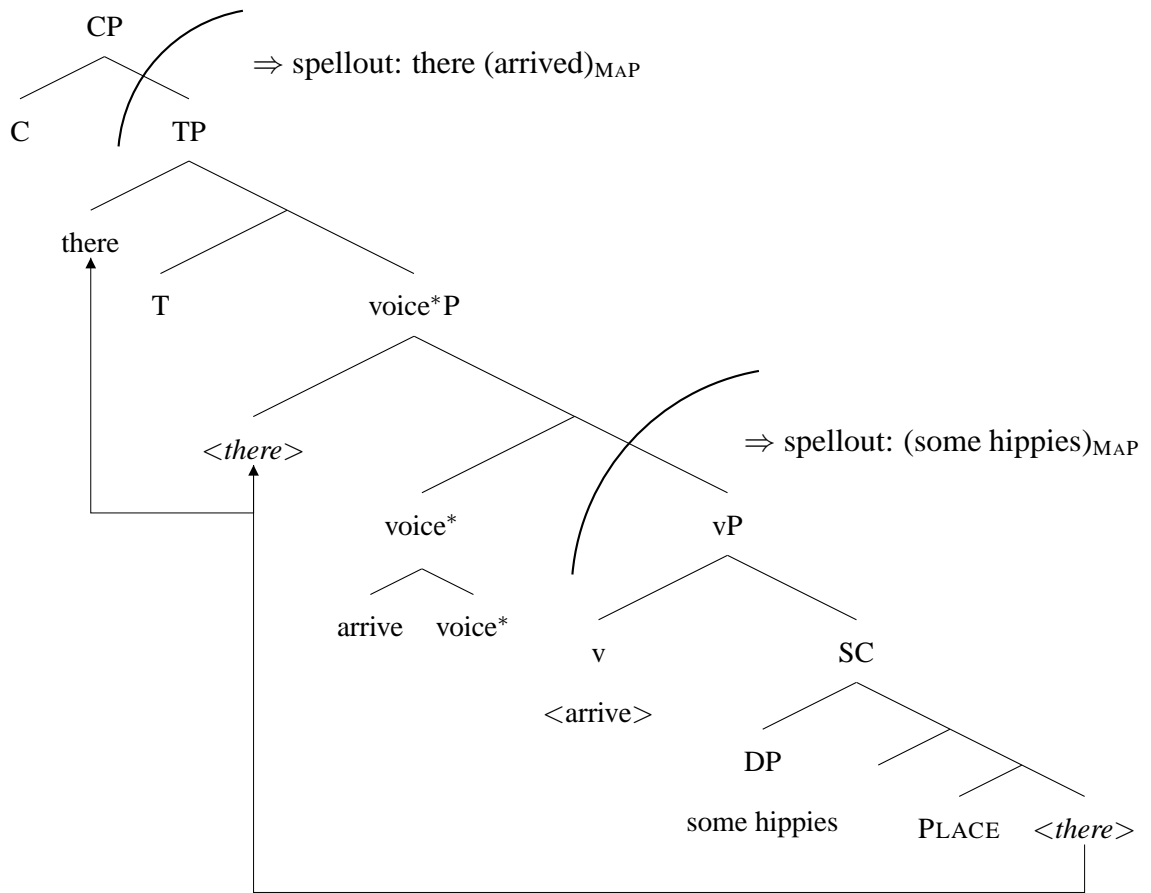
In this analysis, the verb is not joined with either the higher or the lower domain until PF. I propose that the verb ends up joining the higher domain, however, as shown in (278). How does this come about, when a verb adjoined to a prosodic domain in the other derivations we have seen does not get parsed as a MaP? In (278), the highest constituent in the second spellout domain in (278) is *there*. Unfortunately, this functional element is not allowed to be a prosodic word; the verb, however, is eligible to be a prosodic word, and so in this case, the verb is always forced to be

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parsed as a MaP in the higher domain. The functional element *there* cliticizes to the prosodic word formed by the verb in the way that functional elements usually do.

Notice that the state of affairs outlined above is very much like that of a transitive sentence. The merger of *voice** occurs when a transitive direct object is licensed by *v*, but it comes with the requirement that extra structure will be merged above. This state of affairs also captures the spirit of Burzio's generalization, though in this analysis, Burzio's generalization is cast in terms of the amount of syntactic structure that must be merged above the vP level. I will have more to say about Burzio's generalization in Chapter 6.

These insights are in line with work by Kučerová (2012b), who connects the distinction between strong and weak phases to the availability and unavailability of accusative case: ACC is assigned to an internal argument only when this argument is spelled out within the vP/voiceP phase; this occurs only when the *v*/*voice* head has the property of being a strong phase, and only when the material in the vP/voiceP can be linearized—pronounced (Richards, 2006). Kučerová's proposal thus connects linearization (pronounceability) to spellout and the creation of a domain for case assignment. According to Kučerová, ACC is not available if *v*/*voice* does not trigger spellout—i.e., if *v*/*voice* is weak. Drawing on Kučerová (2011), Kučerová (2012b) provides support for these ideas with data from North Russian dialects in sentences that have no external argument but that have an internal argument can receive either NOM or ACC. The internal argument can receive ACC when the vP/voiceP domain is extended by a have-Perfect structure. This extra syntactic structure achieves what Kučerová calls a "transitivity-like extension," and as a consequence, the internal argument can remain in situ and be spelled out. For Kučerová, what's important about

this situation is that this additional structure creates a case domain. For our purposes here, what matters is that *voice** results in a spellout domain such that the direct object is parsed as a MaP.

If Kučerová's approach is right, then the idea that locative *there*-insertion sentences have two domains gets further support from the fact that the direct object in locative *there* sentences can get ACC case. We have already discussed the fact that the DP in Italian existential locatives is a direct object, allowing *ne*-cliticization. German facts suggest that there are two case domains in existential locative sentences, as shown in (279).

(279)   Direct objects in German locative *there* sentences have ACC   (German)

    a.   Gibt es einen Mann   hier.
             gives it a   man.ACC here
             There is a man here.

    b.   Ein Mann   ist here.
             A   man.NOM is here
             A man is here.

In (279), no *there* means no ACC. This line of analysis gains support from research arguing that the associate in French *il* and Norwegian *det* sentences is ACC (Pollock 1983, Askedal 1986). These are all situations in which we might say that we see a mixture of unaccusative and transitive properties. The potential connection of case domains to domains for prosodic accent assignment is intriguing, but further exploration of it must be set aside for future research.

Conclusion

6.0 Introduction

This dissertation began with the definition of unaccusativity given in (280).

(280)   Unaccusative sentence

   a.   −external argument

   b.   +VP-internal argument requiring structural case

An important aspect of this definition is that it makes unaccusativity a property of vPs and not a property of "verbs" themselves. Drawing on recent work on argument structure and the observation that there are at least two vP-internal positions that receive structural case, I proposed two basic unaccusative structures. These structures,

shown abstractly in (281), include what I have called the *simple complement* structure (A) and the *complex complement* structure (B).

(281)   Two unaccusative vPs

   A.   Simple complement structure   B.   Complex complement structure
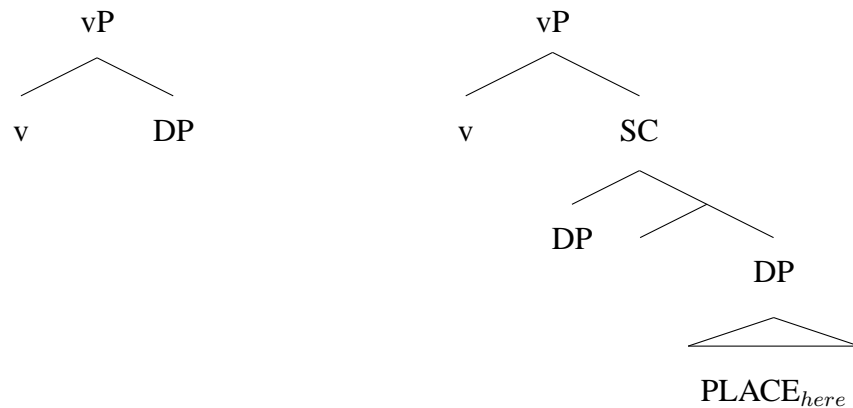
In the simple complement structure, an internal argument is merged as a complement to *v*. In the complex complement structure, the internal argument is the subject of a lower domain that is predicational; I label this structure a Small Clause. With these structures in hand, I then asked what consequences they might have at the interfaces with syntax. The broader goal of asking this question is to shed light on which aspects of syntactic structure have effects on the pronunciation and the interpretation of sentences.

6.1 The syntax-information structure interface

Drawing on early work on the introduction of new discourse referents in an ergative language (Du Bois, 1987), we turned to the interface with semantics. Here we examined the effects that the structures in (281) might have with respect to the ways in which referring expressions are introduced in a discourse. I started from the standard hypothesis that existential closure (∃C) can (though is not forced to) occur at the vP (Diesing, 1992). I hypothesized an additional constraint on ∃C such that it is available only in the presence of a predication, where a predication is an asymmetrical relationship between two phrases. This hypothesis correctly predicts that direct objects in *transitive* sentences can introduce new discourse referents (modulo the types of restrictions discussed in Karttunen 1976).

I then asked what types of *intransitive* sentences can introduce new discourse referents. Unergative sentences and unaccusative sentences with the simple complement structure as in (281)A do not have an asymmetrical relationship between two phrases, and therefore they do not have a predication in the relevant sense. Therefore, ∃C cannot occur at the vP level, and these configurations cannot introduce new discourse referents. On the other hand, sentences with the complex complement structure as in (281)B do have a predication—the Small Clause—and therefore ∃C is allowed at the vP level, and a new discourse referent as the subject of the SC is possible. On this analysis, the "predicate" part of the SC is a contextually-given location, in the spirit of work such as Erteschik-Shir (2007), Francez (2007) and Partee and Borschev (2004). The way in which I have defined 'predication' here, as an asymmetrical relationship between two phrases, and the effects that predication has at the interface with discourse, implements technically the observation that

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well-formed utterances often conform to a topic-comment or theme-rheme structure (Givón 1983, Jäger 2001). But this analogy only goes so far, since if a new discourse referent is introduced in the complex complement structure, then the information ordering within the SC would be described in these terms as "comment-topic" rather than "topic-comment."

At the syntax-information structure interface, the two unaccusative structures have differing effects in terms of the ability to introduce new discourse referents in the manner that I have described (∃C at vP): *there*-insertion and complex complement sentences pattern with transitive sentences, and sentences with the simple complement structure pattern with unergative and transitive external arguments. Table 6.1 summarizes these findings, with the two unaccusative structures circled in order to highlight their differing distribution.

√ new discourse referent	# new discourse referent
Transitive direct object	Transitive external argument
√ *Jamie broke a vase*	#*A hippie broke a vase*
Complex complement unaccusative	Simple complement unaccusative
√ *A vase arrived*	#*A vase broke*
	Unergative
	#*A hippie sneezed*

Table 6.1: Sentence types grouped by information structure effects

One of the insights of this examination of unaccusativity at the syntax-information structure interface is an explanation for why external arguments so rarely function as new discourse referents. If ∃C is available only at the vP level, then arguments

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merged higher up are not eligible candidates for ∃C. The possibility exists, how-ever, that an external argument may be existentially closed if it is in a clause that is embedded under a higher vP. More research needs to be done on this possibility.

6.2   The syntax-phonology interface

Turning to the interface with the phonology, I focused on the way in which syntactic structure determines the formation of domains for phrase stress in all-new sentences. I adopted the hypothesis that syntactic structure is cyclically built up and sent to the interfaces during the course of a derivation; on this hypothesis, the cyclic unit of structure-building is called a phase. I discussed different ways of defining the size of the syntactic structure (the spellout domain) that is sent to the interfaces at the end of a phase. I argued that the only viable hypothesis is one in which the spellout domain is the complement of a strong phase head.

Taken with the notion that the voice head in most unaccusative structures is not a strong phase head, I showed how the phase-based hypothesis correctly predicts a single domain for phrase stress (φ-domain) in unaccusative sentences, and two domains for phrase stress in transitive and *there*-insertion sentences. I showed that the phase-based hypothesis predicts one or two domains for phrase stress in unergative sentences. We saw that the unergative pattern was a consequence of the fact that the verb does not form a φ-domain on its own but is adjoined to a φ-domain. Unergative sentences have a strong voice head, resulting in potentially two φ-domains, and I argued that when the verb joins the higher domain, the subject-accent pattern results, and when the verb joins the lower domain, the two-accent pattern results.

At the syntax-prosody interface, then, we see a different effect than we do at the syntax-information structure interface. As we see in Table 6.2, the simple complement structure and the complex complement structure pattern together in having one domain for accent assignment, and *there*-insertion and transitive sentences have two domains. Unergative sentences can have either one or two domains, so they are shown in both columns of Table 6.2.

1 prosodic domain	2 prosodic domains
Simple complement unaccusative	transitive
A VASE broke	*JAMIE broke a VASE*
Complex complement unaccusative	*there*-insertion
A HIPPIE arrived	*There ARRIVED a group of HIPPIES*
unergative	unergative
A HIPPIE sneezed	*A HIPPIE SNEEZED*

Table 6.2: Sentence types grouped by prosodic patterns

6.3 Phases and the contextual determination of voice

As we see in Table 6.1 and Table 6.2, transitive sentences pattern with unaccusative *there*-insertion sentences in introducing new discourse referents (in the manner described above) and in having two domains for phrase stress. I have argued that the merger of a phase-ending head at the voice level brings about this property of a sentence having two domains. Do phases have a direct role in the establishment of new discourse referents? One might think so at first, but I have argued that the availability of ∃C is what allows for the establishment of discourse referents, and I have followed

the hypothesis that this operation of semantic composition is not tied to the syntactic phase in any direct way. There is one way in which the availability of ∃C may be seen as a side-effect of phase-based spellout, however.

I have argued that ∃C is available only when the derivation has a predication, an asymmetrical relationship between two phrases. This configuration occurs in the SC that is part of the *complex complement* unaccusative structure. This structure may or may not end up with a strong phase head and two spellout domains. But the configuration of an asymmetrical relationship between two phrases also occurs in transitive sentences, where the strong phase head stands between the two phrases that are in opposition. In this way, the merger of a strong phase head indirectly allows for a configuration in which a new discourse referent can be introduced. This is because a strong phase head brings with it the requirement for further syntactic structure-building (Kučerová, 2012b). Technically, I have implemented this as the requirement that *voice** have a filled specifier. The fact that transitive sentences can introduce new discourse referents is therefore a *side-effect* of phase-based spellout rather than a direct consequence of it.

I have argued that *voice** can be merged only when the internal argument (direct object) of the clause is licensed within the vP (or when there is no visible internal argument, as in the case of unergatives). If *voice** is merged when the direct object is not licensed, the complement of *voice** will be sent to the interface, including the unlicensed direct object, and the derivation will crash.   In the analysis I propose, licensing is implemented as an agreement relationship between *v* (or T) and the internal argument. When *v* does not agree with the internal argument, *voice** cannot be merged; this is because the cycle of syntactic operations cannot end until that inter-

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nal argument is licensed. When *v* does not agree with the internal argument, a *voice* head is merged, but in its non-phasal version, *voice*$^-$. The direct object gets another chance at licensing when T^0 is merged, and if T^0 and the internal argument enter into an agreement relationship, then as far as the direct object is concerned, the phase may end and the syntactic object can be sent to spellout.

On this account, then, the relationship between *v* and the internal argument plays a crucial role in determining whether strong voice or weak voice will be merged. The next subsections review the syntactic analyses I have proposed, focusing on the roles of *v* and *voice*.

6.3.1   The system, with no AGREE

When *v* and DP do not agree, and voice$^-$ is merged, we get both types of unaccusative sentences (with the exception of *there*-insertion sentences, as discussed below). This is shown in the right branch of the chart in (282). I have stipulated that voice$^-$ does not allow a specifier, so $\pm\theta$ is not defined, and so when we have v$_{\text{no agree}}$, there is only one value of voice$^-$.

(282)   Simple complement and complex complement unaccusatives: $v_{\text{no agree}}$+voice$^-$

$v_{\text{no agree}}$

voice*

voice$^-$

unaccusative

✓ *A vase broke*

✓ *Some hippies arrived*

$+\theta$

unergative

Jamie sneezed

$-\theta$

impersonal

Er wordt hier veel gedanst

'It is danced here a lot'

$+\theta$ $-\theta$
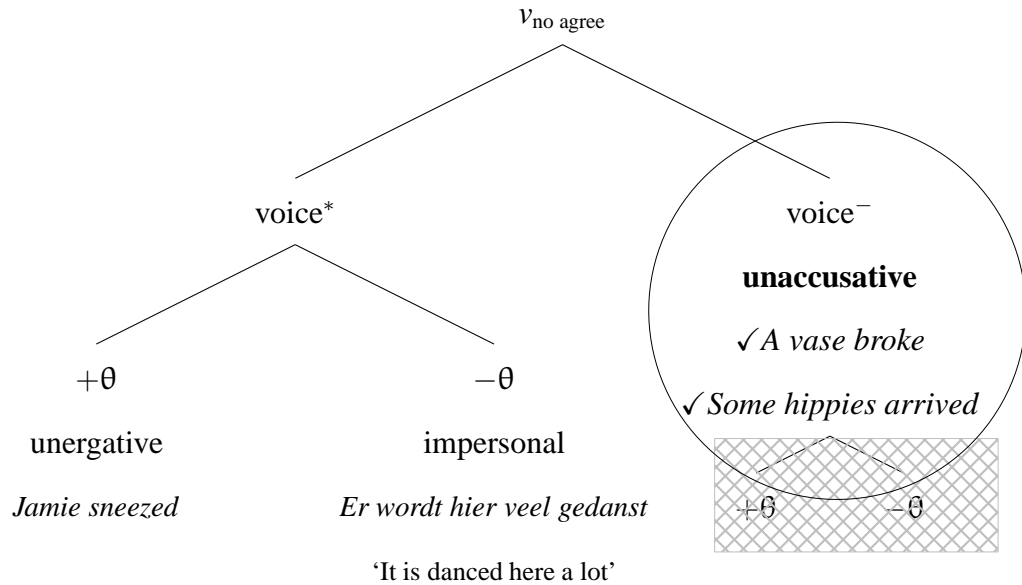
Note that although I will claim that v_{agree} always results in *voice**, the implication does not go the other way. As I suggest in the diagram in (282), unergative and impersonal sentences have *voice**, but it is likely that they do not involve an agreeing *v*. According to the analysis in Wood (2012), Icelandic *-st* sentences also qualify as having non-agreeing *v* with voice$^*_{-\theta}$.

In accounting for some unaccusative sentences as a result of the lack of agreement between a verbal head and an internal argument, this analysis follows that of Harves (2002). However, the analysis that I propose suggests that a sentence can in some cases be unaccusative when *v* and the internal argument *do* agree; this is what happens with *there*-insertion sentences.

One feature of this analysis that I would like to stress is the claim that movement of the direct object to spec,TP is not directly related to the unaccusativity of

the sentence. For example, on my analysis, movement of *a vase* in a sentence like *a vase broke* occurs to satisfy the EPP feature of T^0, not because the internal argument needs Case. Following standard assumptions about A-movement, the internal argument *cannot* move until it is licensed; in the case of *a vase broke*, T^0 agrees with the DP. Let us review how the system works for this sentence.

The tree in (283) shows that *v* has not entered into an agree relation with the direct object.

(283)   vP for *A vase broke*

```
                        vP
                       /  \
                      /    \
              v ——×——→ DP
         no AGREE        /  \
                        /    \
                      DP    √break
                     /  \
                    a vase
```
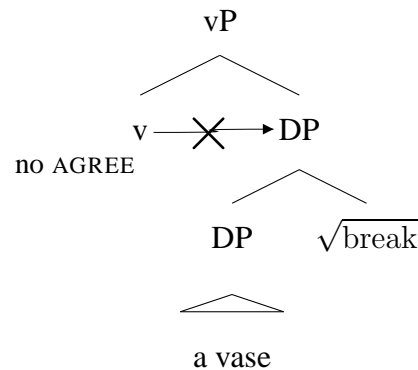
The lack of agreement between *v* and the DP makes it impossible for the phase to end and the derivation to continue successfully, since *a vase* is not licensed yet. If the phase were to end, this DP would be sent to the interfaces unlicensed, and the derivation would crash. In a successful derivation, a voice head is merged, but this head does not have the property of triggering spellout. This part of the derivation is shown in (284).

(284)   voice⁻P for *A vase broke.*

$$voice^-P$$

voice⁻   vP

no AGREE   v ——✕——→ DP

DP $\sqrt{\text{break}}$
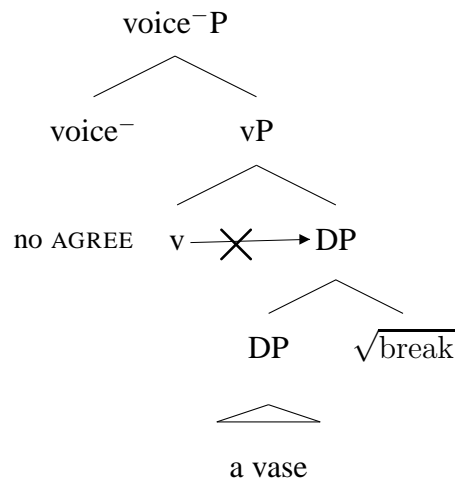
a vase

As the derivation continues, T^0 is merged. T^0 can enter into an agree relation with *a vase*, thus licensing the direct object. This is shown in (285).

(285)   TP for *A vase broke.*

TP

T   voice⁻P

AGREE

voice⁻   vP

v   DP

DP $\sqrt{\text{break}}$
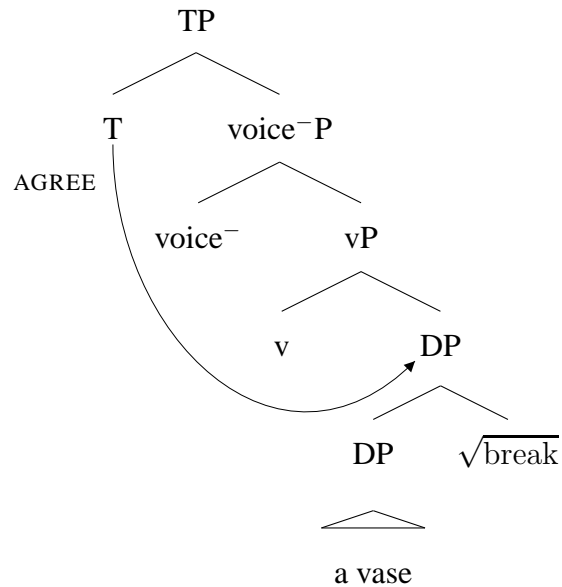
a vase

Because T^0 has an EPP feature, its specifier must be filled. Now that the direct object is licensed, it can undergo movement to spec,TP, as shown in (286).

(286)   EPP-driven movement in *A vase broke.*
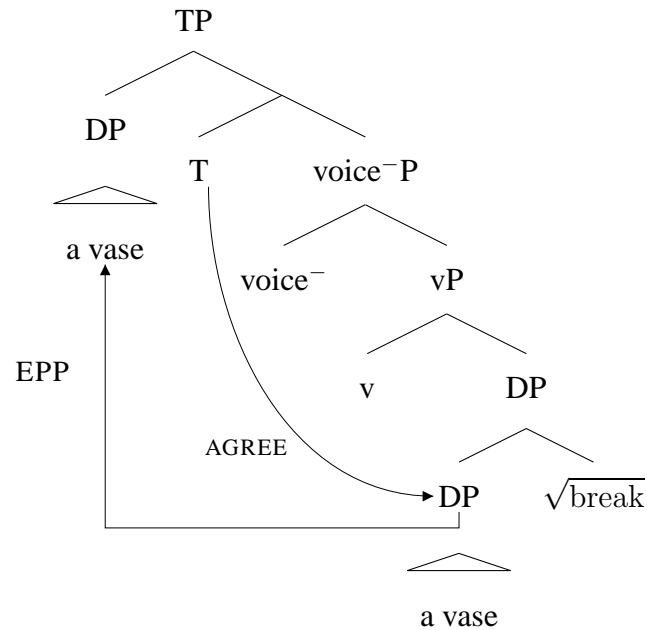
The derivation for complex complement unaccusatives is very similar. This derivation is shown in (287).

(287)   Some hippies arrived.

```
                          TP
                 ┌─────────┴──────────┐
               DP                      │
              ╱‾‾‾╲        T         voice⁻P
             a vase                 ┌────┴─────┐
                                 voice⁻         vP
                                           ┌─────┴─────┐
                                           v  √rive      SC
                                                    ┌─────┴──────┐
                                                   DP            DP
                                                 ╱‾‾‾‾╲      ┌────┴────┐
                                              some hippies  DP        a-
                                                          ╱‾‾‾‾╲
                                                        PLACE_{here}
```

EPP · AGREE
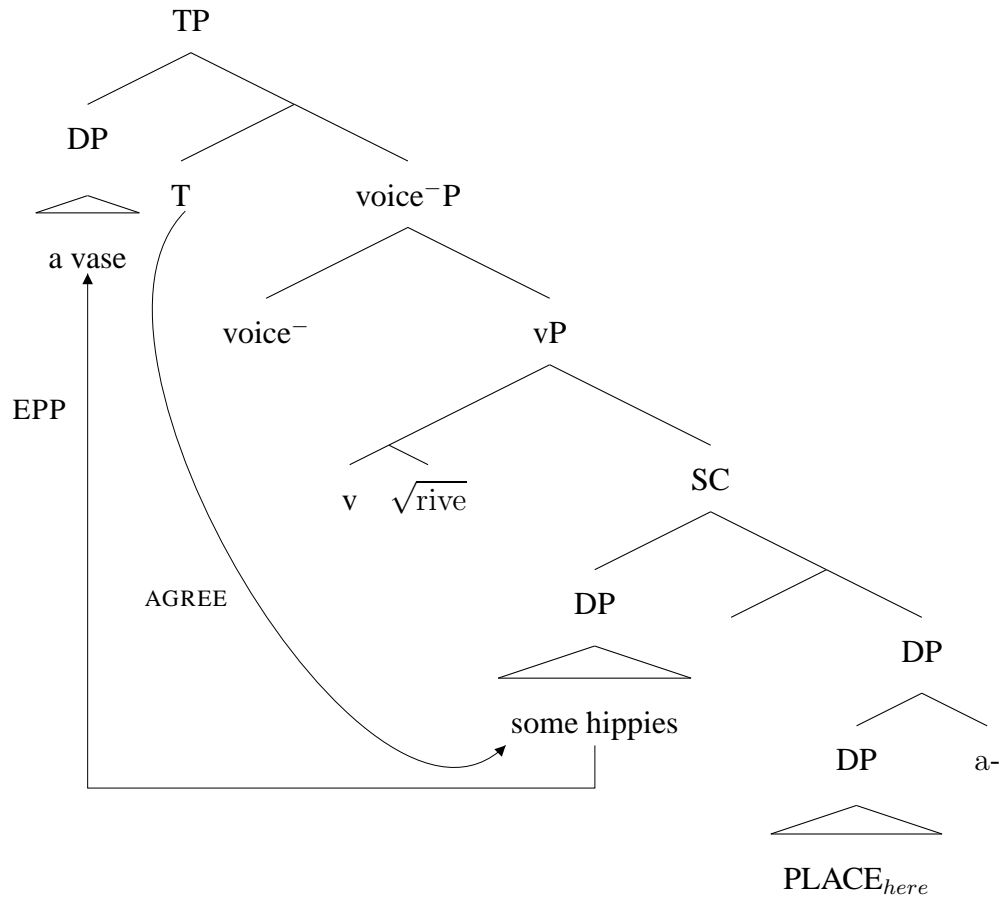
6.3.2 The system, with AGREE

I have argued that transitive and unaccusative *there*-insertion sentences result from a configuration in which *v* agrees with a direct object, as shown in the diagram in (288). I have stipulated that v_{agree}+voice⁻ is not possible, so the voice⁻ side of the diagram is shaded out.

(288)

v_{agree}

voice*

voice⁻

$+\theta$ $-\theta$

$+\theta$

$-\theta$

transitive *there*-insertion

The hippies broke a vase *There arrived a group of hippies*

? There ran into the room a little boy
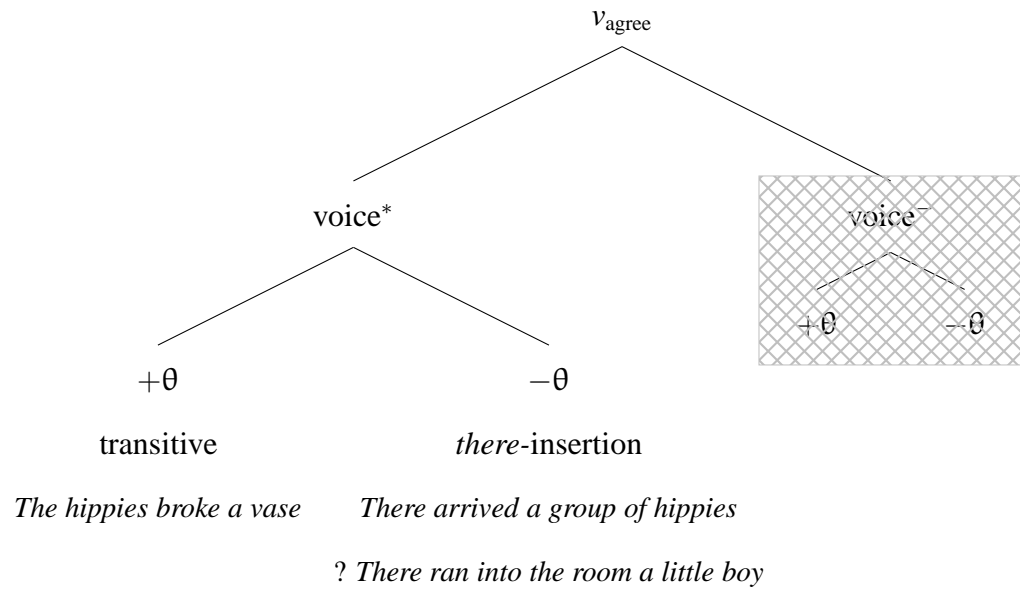
Let us review the derivations we have seen that involve *voice**. The tree in (289) shows the beginning of this derivation. Here *v* agrees with the internal argument.

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(289)   *v* agrees with internal argument

$$
\begin{array}{c}
vP \\
\diagup\diagdown \\
v \longrightarrow DP \\
\checkmark\text{AGREE} \\
\diagup\diagdown \\
DP \quad \sqrt{\text{break}} \\
\diagup\diagup\diagdown \\
\text{a vase}
\end{array}
$$
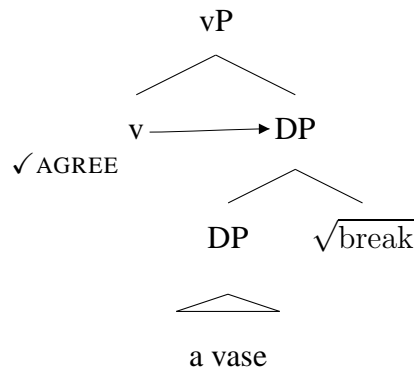
Agreement effectively licenses the DP, and the phase can end. A phase-ending *voice* is merged, as shown in (290) along with the rest of the derivation. I have stipulated that whenever we have v_{agree}, the only type of voice that can be merged is strong voice. This derivation also indicates the spellout domain that is formed as a result of *voice**. Recall that this results in two domains for phrase stress.

(290)   TP for *Jamie broke a vase*

```
                          TP
                 ╱─────────────╲
           Jamie              
             ▲         T        voice*P
             │              ╱─────────────╲
      EPP    │                          
             │        <Jamie>                    Spell-out domain
             │                   voice*₊θ      vP
             └──────────────              ╱──────╲
                                     v           DP
                                     └              ▲
                                  ✓ AGREE        ╱────╲
                                            DP      √break
                                          ╱──╲
                                         a vase
```

Where the subscripts use LaTeX: $voice^*_{+\theta}$
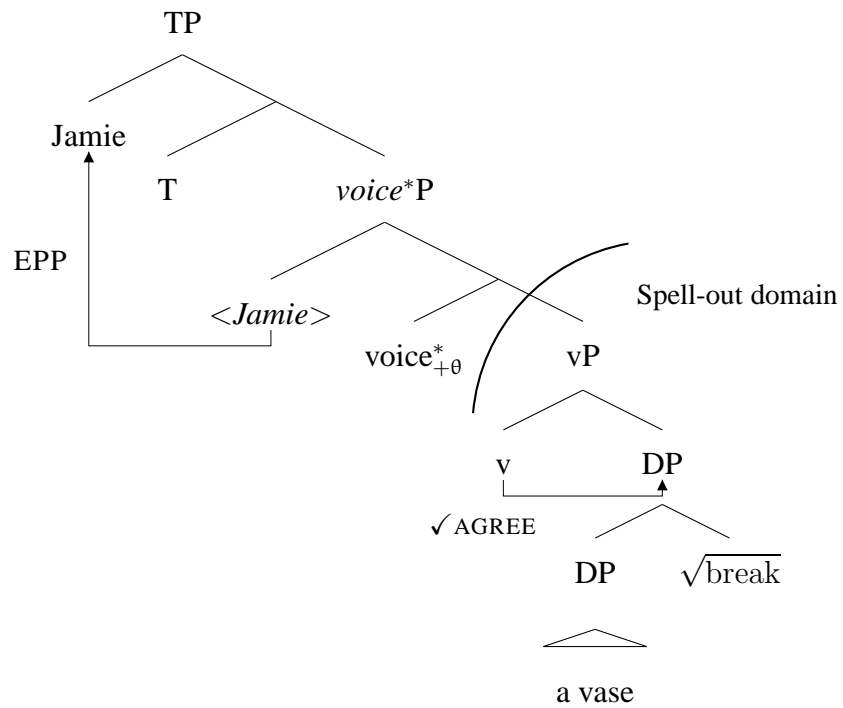
The tree in (291) shows the derivation for *there*-insertion sentences. These sentences have an agreeing *v* and voice$^*_{-\theta}$. In order to save space, the movement of the [*v* + root] complex to *voice* is not shown in (291).

(291)   *there*-insertion sentence: *There arrived a group of hippies*
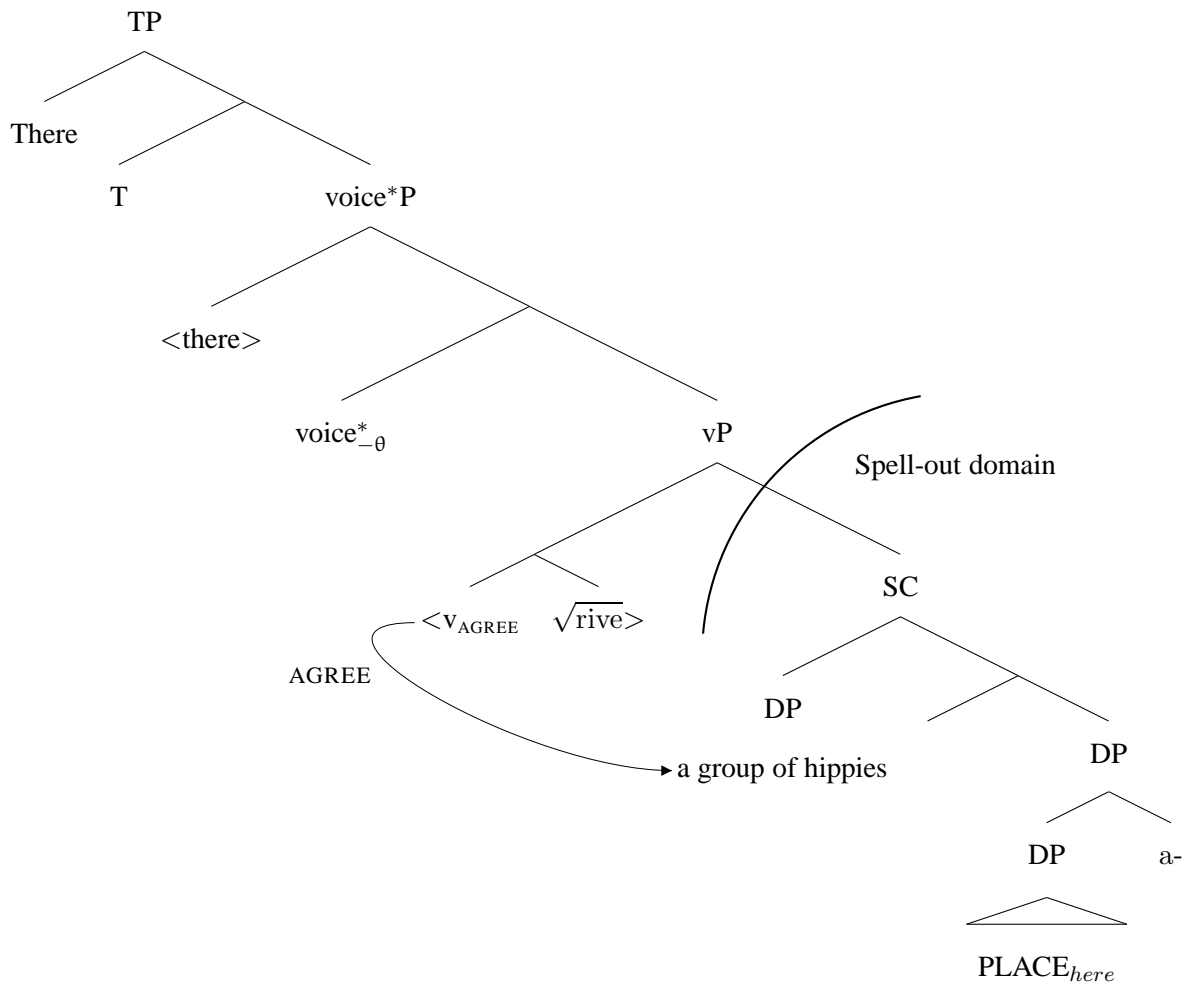
6.4   Burzio's Generalization

Burzio's (1986) book on Italian syntax was perhaps the first major piece of research in the standard Transformational framework of the time (GB) that incorporated insights on unaccusativity from Perlmutter (1978) and other work in Relational Grammar. Burzio observed a correlation between theta-role assignment and Case assignment.

This observation became known as "Burzio's Generalization" (292), which Burzio put as a two-way implication, shown in (293):

(292) Burzio's Generalization

"I will try to show that all and only the verbs that can assign θ-role to the subject can assign (accusative) Case to an object" (Burzio, 1986: 178)

(293) Burzio's Generalization as a two-way implication

$\theta_S \longleftrightarrow A$ (Burzio, 1986: 185)

Burzio's Generalization covers a great deal of data, but it does so as a generalization, not as an explanation. It is therefore worth asking, at this point, what progress we have made in understanding Burzio's Generalization.

Marantz (1991, 2000) has argued that we must separate the notion of licensing of DPs from the notion of morphological case. In standard approaches to case theory, the capital 'C' in *Case* refers to the notion that all DPs must be licensed in some way, and it refers to the hypothesis that case-marking is how licensing takes place. Marantz (1991, 2000) argues that Burzio's generalization should not be seen as being about a correlation between Case as licensing and a thematic external argument. Marantz argues that once we separate case from licensing, then we need a theory of morphological case realization, and he argues for a theory of dependent case.

"It looks like ACC case can't be assigned when there's a non-thematic subject because in most situations in which there's a non-thematic subject, an NP governed by V+I raises to this non-thematic subject position and thus the subject and object positions are filled by members of the same chain." (Marantz, 2000: 26)

If Burzio's generalization is not about morphological case, then I would like to propose that it is at least partially about the interaction of licensing with the cycle. On my analysis, the licensing (implemented as agreement) of a direct object carries with it the requirement for another cycle of structure-building (i.e., another phase) further up the tree. In my analysis, this idea is implemented through the hypothesis that when the vP includes the configuration v_{agree}+DP, a phase-ending head is always merged next, either $voice^*_{+\theta}$ or $voice^*_{-\theta}$. Note that this includes the case of *there*-insertion with unaccusative vPs. From this perspective, Burzio's generalization might be along the following lines: all and only vPs in which the internal argument is licensed by v can have two phases (or maybe "can have $voice^*$"). And so Burzio's generalization is about the consequences of the licensing of the direct object within the vP. Now, if v does not agree with the internal argument, then only a weakly phasal voice will select for the vP. The merger of $voice^-$ results in an extension of the phase; further syntactic operations must occur before the syntactic object can be sent to the interfaces.

Appendix: Corpus Experiment Data

subject (ANY)	verb lemma	sentence (unaccusative)
that importance	change	over the years that importance has changed
their parents	come	their parents come
my daughter	come along	and sometimes my daughter will come along on her little bicycle
the green onions	come along	And , uh , the green onions are coming along
it	come around	And it , it 's , it 's really coming around
school holidays	come around	school holidays come around
it	come out	but it 's coming out a little bit at a time instead of all at once
this guy	come over	and this guy comes over ,
the alleys	come to	the alleys , ar- , come to the back of the house , you know
he	die	Of course he did n't die
the spackling	dry	And then the spackling had to dry a day
I	get	and then I got into the Bargello
they	get out	they actually get out away from the home
the guy	get out	and , you know , the guy gets out in two months
they	get there	they got there
We	go	We 'd be going again this , this year if circumstances had n't changed
it	go	So it just goes down the dining room ...that way

Table 6.3: Unaccusative sentences with ANY subjects, part 1

he	go	and he just goes to the Dallas one
We	go	We 've gone out to , um , uh , a place in western Pennsylvania called Falling Water
the years	go	the years went by
we	go	So we went to one
they	go (home)	and they go home
we	go (home)	Uh , we went home to visit family
Galen	go (to school)	Galen is going to go to kindergarten next fall
Matthew Broderick	go (to school)	Matthew Broderick 's going to film school
the injector pump	go bad	And , uh , the injector pump went bad
it	go on	and it 's certainly , and it 's certainly been going on over there
your daughter	graduate	your daughter had graduated from college
I	grow up	I kind of grew up with them
I	grow up	I was growing up
it	hang out	it 's been hanging out for a while ,
the majority of it	happen	the majority of it 's happening during the day
it	happen	it 's going to happen
I	live	I 've lived there for eight years myself
I	live	Uh , I , I live alone now
I	live	I 've lived here all my life
it	move	it moves up this way
about four hundred	show up	about four hundred showed up ,
I	travel	I was traveling by myself in a car
we	wait	but mostly we wait until they come out on video tape ,
it	work out	Course it does n't always work out in their favor

Table 6.4: Unaccusative sentences with ANY subjects, part2

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subject (ANY)	verb lemma	sentence (unergative)
I	backpack	And I backpack a lot over the summer
I	complain	so I ca n't complain too much
I	cry	Um , I cried the first time when the , um , the wagon man got killed
I	do crafts	But see I do crafts too ,
they	do gardening	they do all kinds of , uh , gardening and not just flowers like women do
we	do hiking	we did quite a bit of hiking , which is kind of fun
I	do tech writing	And , uh , so I did tech writing for a number of years
I	do work	And I 've done employee assistant work
my kid	jump	my kid is jumping on me
this dog , Dennis	jump	but , uh , this dog , Dennis jumped in
you	jump around	you jump around in your leotards
they	kick	And they had to kick
we	laugh	We , we laughed about it
I	read	I read
I	sit	I was sitting there
three . . . families	stay	three or four or five families can stay in those cabins
I	talk	So , anyway , I guess we ca n't talk much more about that ,
you	talk	you 're talking
we	talk	and we 'll talk to you later
he	talk	and he was talking about how you keep up with the utilities here
we	talk	well , we could talk about that ,
we	talk	we talk about what rules , if any
I	type	I type
It	walk	It 's like I can walk ,
everything	work	and keep- , everything is working pretty good
they	work	they used to work
I	work	In fact , I , I work out of my home
both , uh , of the parents	work	both , uh , couples , you know , both , uh , of the parents work
that	work	that would work

Table 6.5: Unergative sentences with ANY subjects

subject (NEW)	verb lemma	semantic type	sentence (unaccusative)
corn	grow	ch.state	corn did n't grow there
some highways	close	ch.state	some highways closed
the roles	change	ch.state	Well , uh , the roles have definitely changed in the last generation or so
they	graduate	ch.state	they graduated
a woman that 's um	come	exist/occur	and then came a woman that 's um ,
the extreme	come in	exist/occur	Well , then the extreme came in ,
the alleys	come	exist/occur	the alleys , ar- , come to the back of the house , you know
the changes	come	exist/occur	the changes come simply by statutory nature
school holidays	come around	exist/occur	school holidays come around
a lot of aggravation	come in	exist/occur	a lot of aggravation comes
things	go (right)	exist/occur	things do n't go right
the divorce rate	hover	exist/occur	the , the divorce rate keeps hovering around fifty percent or so
we	live	exist/occur	we lived in 7 San Antonio
a war	start	exist/occur	a war starts
The fire alarm	go off	exist/occur	The fire alarm went off for some reason
quite a bit of money . . .	go into	motion	quite a bit of money and other , uh , planning efforts went into that
customers	come in	motion	customers are coming in
the cops	come to	motion	the cops are going to come to you
the governor	back down	motion	So the governor backed down
one of my fifth graders	come (up to)	motion	and one of my fifth graders last year came up to me and said . . .

Table 6.6: Unaccusative sentences with NEW subjects, part 1

subject (NEW)	verb lemma	semantic type	sentence (unaccusative)
that stink	come around	motion	that stink came around in the design area …
the tanks	come in	motion	And the tanks came in and , you know , pretty much took care of that
the wind	come in	motion	and the wind came in from the north
the guy	come over	motion	the guy came over
all the tourists	come	motion	all the tourists come there
this tile	come loose	motion	but like this tile 's come loose off the wall ,
a group	come over	motion	a group come over from one of the banks
the shot	get from	motion	The further away I get , the , the , uh , wider the shot gets from the target
most people …	go	motion	most people that , uh , break in or whatever , go to houses without the dogs
the scuds	go	motion	but , you know , as you can see with the , the scuds go right over there
either sixty…	go (to school)	motion	either sixty percent or forty percent , go to college
we	go out	motion	and we use to go , go out to that about once a week
all sorts of factors	go into	motion	ever- , all sorts of factors go into health
the trend	go back	motion	the trend goes back in that direction
the population	go up	motion	the population goes up an extra hundred million every few years
the demand	go down	motion	the demand 's gone all , down a little bit
hurricane Hugo	come through	motion	hurricane Hugo had come through
the deterrent …	go away	motion	Anyway , the deterrent … to not to commit the crime is sort of gone away
we	get off the subject	motion	we 're getting kind of off the subject , , here
about four…	show up	motion	about four hundred showed up ,
we	return	motion	we 've just returned
we	go	motion	we went , we went once to a lean-to
we	come up	motion	we were coming up

Table 6.7: Unaccusative sentences with NEW subjects, part 2

subject (NEW)	verb lemma	semantic type	sentence (unergative)
this person	work (at)	performance	this person worked at 37 the same place
each one	work	performance	and each one works in one part of town
one	work (for)	performance	one works for the State Department
their mother...	smoke	performance	strangely enough , uh , their mother and I both smoked when they were growing up
the house	reek	emission	the house will just reek , of the dogs , and constantly
the phone	ring	emission	the phone rang
they	sleep	bodily processes	Um , and they sleep in the pop-up

Table 6.8: Unergative sentences with NEW subjects

subject (OLD)	verb lemma	sentence (unaccusative)
I	come	I just came back from there
it	come	and it was coming out of the lights , fixtures
He	come (from)	He came from a poor immigrant family ,
he	float	he 's floating down the river
the creeks	foam	the creeks foam brown and all
they	get out	they get out in a couple of years
they	get out of	and they had to get out of there
We	go	We 're going to go to Commerce and see a friend
I	go	I was going to school
they	go down	they have n't gone down
they	go down	and , um , they , they may have gone down a little bit
I	go out	I was going out
I	go out	I , I , uh , I just went out and got a new VCR yesterday with cash
he	go tumbling down	Well , he went tumbling down the steps along with , uh , shooting his foot almost off
those things	happen	those things happen too often
this	happen	this happens all the time
I	listen to	Well , I mostly listen to popular music
They	live	They 've been living there for about three months now ,
I	spend	But , uh , I know I , I spent thirty-four years in education here in the Dayton area
she	stay	and she stays in the house all day while I go to work
she	stay	she stayed home
I	wait	I have to wait for things to go on sale
they	wait	they 've actually waited for them

Table 6.9: Unaccusative sentences with OLD subjects

subject (OLD)	verb lemma	sentence (unergative)
they	car pooling	well they might be car pooling too
you	climb	Well if you had to you could climb up in there and do what you needed to
they	cut up	they 're not , you know , cutting up and so on
they	do	they did a lot better than I did
they	dress (up)	and they dress up like when customers are coming in
he	grin	he is always grinning , whether he is or not
you	jump around	you jump around in your leotards
he	play	and then he 's playing with Robbie Shoncar , who 's a very good ,
I	read	I read a lot ,
I	read	I mean , I read a lot ,
I	stand	You coul- , yeah , ou could stand in there if you really wanted to , I guess
you	stand up	you could n't stand up inside of it because it was so short
he	take over	he took over
we	talk	we were talking about them the other day before
they	talk	they 're talking about in Washington
I	work	you know , I 'd , I 'd much rather work in a hospital than , than to go war
I	work	I can work part of the day
I	work with	and I work with adolescents ,

Table 6.10: Unergative sentences with OLD subjects

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