

The resolution of these issues has become all the more urgent because of certain recent developments in syntax. As a result of efforts to develop a constrained theory, various theories of syntax harness idiosyncratic properties of verbs, particularly their meanings, to explain certain properties of the syntactic configurations in which they are found (for discussion, see Wasow 1985). These theories share the assumption that aspects of the syntax of a sentence are determined by the meaning of the verb in that sentence. This assumption is implicit in early formulations of the Projection Principle (Chomsky 1981), and it finds explicit expression in the theory first proposed by Pesetsky (1982), and later adopted by Chomsky (1986b), that s-selection (semantic selection) determines c-selection (categorical selection). (Although as we discuss in section 5.4 and the afterword, several researchers have recently argued for a very different relationship between lexical and syntactic structure.)

Over the past fifteen years, the relationship between lexical semantics and syntax has received substantial attention in the context of the Unaccusative Hypothesis (Perlmutter 1978). This hypothesis proposes that the class of intransitive verbs is not homogeneous, but consists of two subclasses, each associated with a distinct syntactic configuration. There appear to be striking semantic regularities in the composition of the two classes of intransitives, regularities that are manifested across languages in impressive similarities in verb classification. Because of the convergence of semantic and syntactic properties that characterize it, unaccusativity provides fertile ground for exploring the relationship between lexical semantics and syntax. The importance of the Unaccusative Hypothesis is that, if correct, it allows us to use unaccusativity as a means of identifying aspects of verb meaning that are relevant to the syntax and of appropriately formulating at least some of the linking rules. Besides representing an extended investigation into the nature of unaccusativity, this book is intended as a contribution to the development of a theory of lexical semantic representation and to the elucidation of the mapping from the lexical semantic representation to syntax.

1.1 Unaccusativity Introduced

The Unaccusative Hypothesis, as first formulated by Perlmutter (1978) within the context of Relational Grammar and later adopted by Burzio (1986) within the Government-Binding (GB) framework (Chomsky 1981),¹ is a syntactic hypothesis that claims that there are two classes of

intransitive verbs, the *unaccusative* verbs and the *unergative* verbs, each associated with a different underlying syntactic configuration. For example, from a GB perspective—the approach we use in this book—an unergative verb takes a D-Structure subject and no object, whereas an unaccusative verb takes a D-Structure object—be it clausal or a simple NP—and no subject. Thus, the members of the two classes are associated with the D-Structure syntactic configurations schematized in (1).²

- (1) a. Unergative verb: NP [_{VP} V]
 b. Unaccusative verb: — [_{VP} V NP/CP]

Alternatively, in argument structure terms, an unergative verb has an external argument but no direct internal argument, whereas an unaccusative verb has a direct internal argument but no external argument.³

There is another syntactic characteristic associated with this verb class. As reflected in the name given to the class, an unaccusative verb is unable to take an object with accusative case (or in GB terms, it is unable to assign structural Case to its object). Burzio (1986) has studied this facet of unaccusativity extensively, noting a correlation between the ability of a verb to take an external argument and its ability to assign structural Case. Given the statement of this correlation, which has come to be known as Burzio's Generalization,⁴ an alternative definition is sometimes adopted for an unaccusative verb: an unaccusative verb is one that does not take an external argument (i.e., is unable to assign a θ -role to its subject). For the most part the two definitions pick out the same range of verbs as unaccusative, making it unnecessary to choose between them.⁵ Nevertheless, in this book we have chosen to use the definition involving Perlmutter's characterization of the class: an unaccusative verb is one that takes an internal argument but no external argument. On this definition, unaccusative verbs are identical in D-Structure configurational terms to passive verbs, which also have a direct internal argument but no external argument.

Since the introduction of the Unaccusative Hypothesis, a wide range of phenomena in various languages have been studied that purport to distinguish between unaccusative and unergative verbs (see Grimshaw 1987 for an overview, as well as the entry on unaccusativity in Dubinsky and C. Rosen's (1987) Relational Grammar bibliography). We refer to these phenomena as *unaccusative diagnostics*. Since the Unaccusative Hypothesis claims that the two classes of intransitive verbs are syntactically defined, it appeals to the difference in syntactic configuration to explain many of

the diagnostics that reveal differences in behavior between the classes. Only apparent diagnostics whose ability to discriminate between the two classes can be explained in this way are *actual* unaccusative diagnostics. It turns out that not every phenomenon that appears to distinguish between two classes of intransitive verbs is actually an unaccusative diagnostic in this strong sense.

Much of the initial research on unaccusativity was directed toward establishing the syntactic aspect of unaccusativity, that is, toward proving that there are verbs with the syntactic properties attributed to unaccusative verbs by the Unaccusative Hypothesis. Originally, little attention was paid to the relation between the meaning of intransitive verbs and their membership in the unaccusative or unergative class, although the paper in which Perlmutter introduced the Unaccusative Hypothesis includes a first attempt at delineating the set of semantically defined verb classes that are expected to show unaccusative or unergative behavior. In fact, the Unaccusative Hypothesis was introduced by Perlmutter in the context of the broader Universal Alignment Hypothesis, which suggests that the syntactic expression of arguments is always determinable on the basis of the meaning of the verb. Indeed, the impressive similarity between the verbs selected by unaccusative diagnostics cross-linguistically suggests that there are important semantic facets to the distinction. It has been proposed that the postulation of the Unaccusative Hypothesis permits the statement of a single simple linking generalization that covers transitive and intransitive verbs alike: agent arguments are D-Structure subjects and patient/theme arguments are D-Structure objects (B. Levin 1983, Marantz 1984, C. Rosen 1984, among others). Thus, although the Unaccusative Hypothesis claims that the distinction between the two classes of verbs is syntactically *represented*, it was originally assumed that the distinction is fully semantically *determined*.

1.2 Approaches to Unaccusativity

Once more attention was paid to the relationship between the lexical semantics and the syntax of unaccusativity, it became clear that linguistic reality is more complicated than the simple linking generalization mentioned above suggests. This situation is reflected in the existence of what have become known as *unaccusative mismatches* (L. Levin 1986): cases in which there seems to be an imperfect match between the verbs expected to be selected on semantic or syntactic grounds as unaccusative or unerga-

tive by various diagnostics and the verbs actually selected by those diagnostics. Below we will distinguish between two kinds of mismatches, one that has led to the *syntactic approach* to unaccusativity, which denies that unaccusativity is fully semantically predictable, and another that has led to the *semantic approach* to unaccusativity, which denies that unaccusativity is syntactically encoded. In essence, this book is an extended attempt to meet the challenges that the mismatches present to Perlmutter's original hypothesis that unaccusativity is both syntactically encoded and semantically predictable. The original thesis will be defended throughout the book. In the remainder of this section we lay out the essentials of the syntactic and semantic approaches to unaccusativity and discuss the problems with these two approaches. At the same time we highlight the methodological considerations that are relevant to meeting the challenges that these approaches pose.

1.2.1 The Syntactic Approach

The existence of phenomena that suggest that the classification of verbs as unaccusative or unergative cannot be completely determined semantically has led to the development of the syntactic approach to unaccusativity, first systematically defended by C. Rosen (1984). On this approach, all that unaccusative verbs have in common is a particular syntactic configuration, although Rosen and other proponents of this approach do not deny that there tend to be certain correspondences between the meanings of verbs and their classification as unaccusative or unergative. In this section we discuss the phenomena that Rosen cites in favor of the syntactic approach in order to show that they do not necessarily warrant the conclusions she draws from them.

First, Rosen makes much of the fact that there is no single semantic property common to all unaccusative verbs selected by all diagnostics in all languages (see also Baker 1983, DeLancey 1985, among others). However, the hypothesis that the classification of verbs as unergative or unaccusative is predictable on the basis of meaning in no way implies that all unaccusative verbs or all unergative verbs represent a unified semantic class. Although this point should be obvious, it is worth stressing since often researchers strive to find a uniform semantic characterization for the unaccusative class. But given the many-to-one character of the mapping from lexical semantics to syntax, there is no reason to assume that all verbs that have the syntactic properties attributed to unaccusative verbs will form a semantically homogeneous class. There is no more reason

to assume that the unaccusative class is semantically homogeneous than there is to assume the same about the class of transitive verbs. And one of the points that will emerge from our study of unaccusativity, particularly in chapters 3 and 6, is precisely that the class is not unified semantically. We will show that this assumption has far-ranging consequences since the members of the different subclasses of the unaccusative verb class differ in certain aspects of their behavior; nevertheless, they can all be shown to be legitimate members of the class.

Second, Rosen shows that verbs with similar meanings in and across languages may be classified differently with respect to unaccusativity. For example, she claims that the verb corresponding to *die* acts like an unaccusative verb in Italian, but like an unergative verb in Choctaw (although see Martin 1991 and section 1.2.3 for further discussion of the Choctaw data). Within Italian itself, verbs of bodily process diverge in their behavior: the verb *russare* 'snore' manifests unergative properties, whereas the verb *arrossire* 'blush' manifests unaccusative properties.

Third, Rosen discusses the existence of individual verbs that appear to be classified as both unaccusative and unergative by the same diagnostic. For example, as Rosen points out, certain Italian intransitive verbs are found with both the auxiliary *avere* 'have' and the auxiliary *essere* 'be'. (For reasons of consistency and clarity, glosses of some quoted examples have been expanded or slightly modified.)

- (2) a. Mario ha continuato. (*è)
 Mario has continued is
 'Mario continued.'
- b. Il dibattito è continuato. (*ha)
 the debate is continued has
 'The debate continued.'
- (C. Rosen 1984:45, (21))

- (3) correre 'to run', saltare 'to jump', volare 'to fly', vivere 'to live',
 suonare 'to toll', fiorire 'to bloom' (Centineo 1986:220, (o), (q))

The pattern of auxiliary selection is problematic since with intransitive verbs the selection of *essere* 'be' is considered to be a signal of unaccusative status, whereas the selection of *avere* 'have' is considered to be a signal of unergative status (Burzio 1986, Perlmutter 1989, C. Rosen 1981, among others). Consequently, Rosen concludes from the existence of dual auxiliary verbs that the distinction between the unaccusative and unergative classes is not completely characterizable in terms of meaning alone.⁶

Before we discuss each of the problems just mentioned individually, we provide a brief general evaluation of the syntactic approach. There is no question that in comparison with the syntax, the lexicon is the domain of the idiosyncratic. But the heightened attention that has been paid to lexical matters in recent years has revealed that although many idiosyncratic phenomena are lexical in nature, much of the lexical knowledge that speakers have of their language is systematic, most likely reflecting deep principles of grammar. In fact, aspects of what Chomsky (1986b) has termed "Plato's problem" are as evident in the domain of the lexicon as in the domain of syntax. That is, it is fairly clear that speakers acquire complex knowledge concerning lexical items for which it is hard to argue that they receive direct evidence.

To illustrate this point, we preview a contrast that we discuss at length in chapter 5. This contrast involves the behavior of agentive verbs of manner of motion in the English resultative construction. As the examples show, verbs of manner of motion can appear in two forms of the resultative construction: one involving no object, as in (4a), and one involving a reflexive object, as in (4b).

- (4) a. Jump clear of the vehicle!
 b. Don't expect to swim yourself sober!

As we show in chapters 2 and 5, the objectless resultative is an unaccusative diagnostic, whereas the form with a reflexive object signals that the verb in the construction is unergative. These examples show, then, that agentive verbs of manner of motion can appear in the resultative construction in the pattern expected of unaccusative verbs, as in (4a), or in the pattern expected of unergative verbs, as in (4b). Examples such as these may at first glance be taken to illustrate the idiosyncratic nature of verb classification; that is, agentive verbs of manner of motion can be classified as either unaccusative or unergative. But on closer examination, the opposite turns out to be true. The examples in (4) are not idioms or fixed expressions; furthermore, it can be shown that despite surface appearances the presence or absence of the reflexive is not random.

- (5) a. *Jump yourself clear of the vehicle!
 b. *Don't expect to swim sober!

An in-depth examination of the phenomenon in chapter 5 will show that the judgments of native speakers concerning the grammaticality and interpretation of such constructions are subtle and consistent. If the seemingly

unpredictable behavior of agentive verbs of manner of motion is by hypothesis expected to be principled, we are forced to seek a principled explanation for it. In chapter 5 we will show that it is possible to predict precisely when agentive verbs of manner of motion will appear in the resultative construction in the guise of unergative verbs and when in the guise of unaccusative verbs.

The resultative example illustrates that unless we take as our starting point the hypothesis that the behavior of verbs is indeed principled, we can easily take the sentences in (4) to be evidence for their idiosyncratic behavior. We acknowledge that there is room for idiosyncrasy in the lexicon, so that in languages where there is explicit evidence for the classification of verbs as unaccusative or unergative (such as, for example, from morphological properties), the classification may not be entirely predictable; nonetheless, it is methodologically most useful to assume that the class membership of each verb is for the most part predictable and to test the limits of this hypothesis. After all, taking the assumption that all is chaos as the starting point of our investigation is not likely to lead us to a better understanding of the interface between lexical semantics and syntax.

Furthermore, there are language acquisition considerations that raise clear problems for the syntactic approach. Assuming that a language such as English, which lacks morphological clues that could distinguish between unaccusative and unergative verbs, does encode this distinction syntactically, then learnability considerations dictate that the distinction must be fully determined by the semantics. For example, in chapter 2 we present extensive evidence involving the resultative construction that the distinction between unaccusative and unergative verbs must be syntactically represented in English, even though the overt evidence for this distinction is rather slim. It is unlikely that every child learning English will necessarily have access to evidence concerning the behavior of each intransitive verb acquired with respect to the kinds of phenomena that force the postulation of an unaccusative or unergative classification for that verb. If Universal Grammar allows both unaccusative and unergative D-Structure configurations for intransitive verbs, then how does the language learner know how to classify newly learned verbs? There are two options: either (i) the choice is predictable on the basis of the meaning of the verb being acquired, or (ii) there must be some way, on the basis of simple data, to determine what class a given verb belongs to. Since option (ii) appears not to be correct for English, then, if the Unaccusative Hy-

pothesis holds, a verb's class membership must be completely determined on the basis of its meaning. It is possible, however, that in languages with overt morphological markers of unaccusativity, membership in the unaccusative or unergative class may be grammaticalized; since there are overt indicators of class membership, the members of the classes may show some deviation from the semantic criteria for class membership.

Let us now briefly consider how the mismatches that Rosen discusses can be dealt with. As we note elsewhere (B. Levin and Rappaport 1989, B. Levin and Rappaport Hovav 1991, 1992), the existence of verbs with similar meanings but different classifications need not have the implications for the Unaccusative Hypothesis that Rosen suggests. The key to dealing with these mismatches is the recognition that certain aspects of verb meaning are relevant to the syntax and other aspects of meaning are not, a point also made forcefully by Pinker (1989). It is only after the syntactically relevant aspects of meaning are isolated that it is possible to evaluate whether two verbs are expected to have the same classification with respect to the Unaccusative Hypothesis. Consider once again Rosen's example concerning the varied classification of Italian verbs of bodily process. The behavior of these verbs is only problematic for the Unaccusative Hypothesis if the verbs belong to the same syntactically relevant semantic class. In fact, it is unclear whether the notion "bodily process" can be used to define such a class. There are other ways of classifying these verbs according to meaning, and some of these alternative semantic classifications do not necessarily put all bodily process verbs into the same class. The concept denoted by the English verb *snore* can be classified as an activity, whereas that denoted by the English verb *blush* is open to an activity or change-of-state interpretation, depending on one's perspective. What is interesting is that the Italian verb *arrossire* 'blush' literally means 'become red', suggesting that in Italian this verb can be considered a verb of change of state.⁷ Several recent studies have converged on the conclusion that semantic notions such as "activity" and "change of state" are aspects of meaning that are relevant to the classification of verbs (Dowty 1991, Pinker 1989, Pustejovsky 1991b, Tenny 1987, 1992, Van Valin 1990, among others); if so, there is no reason to expect the verbs *snore* and *blush* to pattern in the same way. In general, a comparison of the status of two apparently similar verbs either in a single language or in two different languages is only valid if the comparison is made with respect to components of meaning relevant to the determination of unaccusativity. We devote much of chapters 3, 4, and 5 to isolating

those aspects of meaning that figure in the classification of verbs and to uncovering exactly how these components of meaning contribute to verb classification.

The same considerations lead to a solution for the problem posed by verbs, such as the agentive verbs of manner of motion, that select two auxiliaries. Work by various researchers (see, among other works, Hoekstra 1984, L. Levin 1986, Van Valin 1990) has revealed that for at least a subset of the dual auxiliary verbs, the choice of auxiliary is associated with systematic differences in meaning (see section 5.1.1). As we show in chapter 5, dual auxiliary verbs are just one instance of the more general phenomenon of verbs that show multiple classification with respect to a variety of syntactic phenomena. We term such verbs *variable behavior verbs*. In chapter 5 we investigate several types of variable behavior verbs, including certain dual auxiliary verbs, and demonstrate that each type of variable behavior verb is associated with two meanings differing precisely in those elements of meaning that we have found to be syntactically relevant. If such correlations can be shown to hold more generally, then the existence of verbs with multiple classifications does not present a problem for the hypothesis that unaccusativity is semantically determined; rather, it shows yet again the importance of pursuing the search for syntactically significant components of verb meaning. Furthermore, it is fruitful methodologically to make variable behavior verbs a focus of study since contrasting the meaning of a verb when it shows one type of syntactic behavior with the meaning of the same verb when it shows another type of syntactic behavior will aid in the isolation of just those aspects of meaning that are relevant to the syntactic classification of verbs.

1.2.2 The Semantic Approach

The syntactic approach can be contrasted with the semantic approach to unaccusativity. The claims of the semantic approach are that the two classes of intransitive verbs can be differentiated on semantic grounds and that the semantic characterization of the two classes obviates the need to attribute different syntactic representations to the verbs they contain. This approach can be contrasted with ours since, although it assumes that unaccusativity is semantically determined, it denies that it is syntactically encoded. The most thorough attempt at developing and justifying the semantic approach to unaccusativity is presented by Van Valin (1990). Van Valin claims that “the phenomena which the Unaccusative Hypothe-

sis (UH) strives to explain in syntactic terms are better explained in semantic terms” (1990:221). We will not review Van Valin’s theory here, since we do so in section 2.4.2.1. Here we discuss some properties of the semantic approach in general and also point out some problems that it faces.

Recall that on the syntactic approach to unaccusativity, unaccusative and passive verbs are found in the same D-Structure syntactic configuration. And indeed there are syntactic and morphological phenomena that class unaccusative verbs and passive verbs together. For instance, as we discuss in chapter 2, in English resultative phrases can be predicated of the S-Structure subjects of passive and unaccusative verbs but not of those of unergative and transitive verbs. Prenominal perfect/passive participles may modify the S-Structure subjects of passives (*a badly written letter*) and unaccusatives (*a recently appeared book*) but not those of unergatives (**a hard-worked lawyer*) and transitives (**a much-painted artist*) (B. Levin and Rappaport 1986, Rappaport Hovav and B. Levin 1992). In contrast, *-er* nominals refer to the S-Structure subjects of unergatives and transitives but not to those of unaccusatives and passives (B. Levin and Rappaport 1988). Similarly C. Rosen (1981) and Perlmutter (1989), among others, argue that Italian participial absolutes can be predicated of S-Structure subjects of unaccusative and passive verbs but not of S-Structure subjects of transitive and unergative verbs. C. Rosen (1984) also mentions voice marking in Albanian, citing Hubbard (1980): unaccusative and passive verbs share a voice-marking morpheme, which is lacking on transitive and unergative verbs. The existence of such phenomena provides strong support for the syntactic approach, since, by hypothesis, unaccusative verbs and passive verbs appear in the same syntactic configurations, and it is difficult to find a semantic property shared by all passive and unaccusative verbs, a point also emphasized by Burzio (1986). Proponents of the semantic approach would have to claim that the objects of transitive verbs and the subjects of unaccusative verbs share a single semantic property. On Van Valin’s semantic approach to unaccusativity, all such phenomena make reference to verbs taking an argument with the macrorole undergoer, but with no argument taking the macrorole actor. Van Valin shows that the notion “undergoer” is not equivalent to the notion “direct object,” since, for example, the object of a multiargument activity verb such as *eat* is a direct object but not an undergoer. Be this as it may, it seems to us misleading to claim that the notion “undergoer” is semantic, since it cannot be reduced to any single semantic notion.

Rather, it can be characterized as a generalization over a number of specific semantic roles; the undergoer is chosen based on an algorithm that makes reference to these specific semantic roles. Therefore, it seems to us that such phenomena strongly support the syntactic approach.

But the semantic approach has been motivated by a second kind of unaccusative mismatch, which highlights the fact that most unaccusative diagnostics do not single out the sole argument of all unaccusative verbs and the D-Structure objects of all passive verbs. This kind of mismatch involves the existence of two or more apparent unaccusative diagnostics that single out distinct (but not necessarily disjoint) semantically coherent classes of verbs. This type of mismatch can be exemplified with data from Dutch. Zaenen (1993) shows that two purported diagnostics of unaccusativity in Dutch turn out to be sensitive to two different semantic features. Prenominal perfect participles are usually said to modify the S-Structure subjects of unaccusative verbs, as in (6), but not unergative verbs, as in (7).

- (6) de gevallen/(pas) gearriveerde jongen
the fallen/(just) arrived boy
(Zaenen 1993:140, (42))
- (7) *de gewerkte/getefoneerde man
the worked/phoned man
(Zaenen 1993:140, (41))

It turns out, however, that according to Zaenen these participles may modify the subjects of telic intransitive verbs, a set of verbs that turns out to be a subclass of the unaccusative verbs, but not the subjects of atelic intransitive verbs. (English shows a similar pattern (B. Levin and Rappaport 1989).) Thus, the following example involving an atelic verb that is classified as unaccusative by other diagnostics is unacceptable:

- (8) *De gebleven jongen
the remained boy
(Zaenen 1993:141, (45a))

On the other hand, in Dutch impersonal passivization is supposed to be impossible with unaccusative verbs (Perlmutter 1978), but Zaenen argues that only verbs whose subjects do not show "protagonist control," a term introduced by McLendon (1978:4), fail to undergo impersonal passivization, whether they are independently considered to be unaccusative, as in (9), or unergative, as in (10), on the basis of other diagnostics.

- (9) *In dat ziekenhuis werd er (door veel patienten) gestorven.
in that hospital was there by many patients died
'In that hospital there was died by many patients.'
(Zaenen 1993:131, (8b))
- (10) *Er werd (door de man) gebloed.
there was by the man bled
'There was bled by the man.'
(Zaenen 1993:131, (7b))

If the explanation for these two diagnostics lies in the syntactic configuration required by the verbs, then such diagnostics are not expected to distinguish between semantically coherent subclasses of verbs. From mismatches of this sort, some researchers have concluded that a syntactically encoded distinction between unaccusative and unergative verbs is unnecessary and that the distinction between unaccusative and unergative verbs is purely semantic, and not syntactic; see, for example, Napoli 1988 for discussion along these lines with respect to English.

On the semantic approach, the nonhomogeneous behavior of intransitive verbs stems from the fact that some constructions are compatible with verbs with certain types of meanings, and others are compatible with verbs with other types of meanings. The bifurcation in the intransitive class, then, does not reduce to any syntactic feature of the verbs, but follows from the compatibility of different semantically defined verb classes with the semantic constraints on the different constructions. In this respect, intransitive verbs are no different from transitive verbs, some of which are compatible with certain constructions and others of which are not. Moreover, the same kind of bifurcation is expected *within* the unaccusative class. Since each construction is associated with its own semantic constraints, there is no reason to assume that all diagnostic constructions should differentiate among the intransitive verbs in the same way. One construction may distinguish telic from atelic verbs; a second may distinguish agentive from nonagentive verbs. Therefore, a single verb may be classified as "unaccusative" by one diagnostic but as "unergative" by another. In this way, the semantic approach explains why most diagnostics single out semantically coherent subclasses of verbs, while allowing for certain types of mismatches. (See also Dowty 1991 for related discussion.)

On our approach to unaccusativity, it is not surprising that the verbs selected by various diagnostics can receive a proper semantic characterization. After all, we argue that the syntactic classification of verbs is

semantically determined. But the fact that the verb classes can be given a semantic characterization does not preclude the attribution of common syntactic properties to all unaccusative verbs. In fact, the original motivation for the Unaccusative Hypothesis was the recognition that some diagnostics are *explained* by the postulation of two syntactically distinct subclasses of the intransitive verbs, an aspect of the syntactic approach that proponents of the semantic approach largely ignore.

The choice between the two approaches rests on showing whether there is any need to postulate a syntactic difference between the unaccusative and unergative verbs. For the proponents of the semantic approach, this means demonstrating an explanatory connection between the semantic classification of a verb and the diagnostics, thus obviating the need for a syntactic encoding of the distinction between unaccusative and unergative verbs. At the heart of the semantic approach is the proposal that certain constructions, by virtue of their meaning, “select” for verbs belonging to certain semantic classes. But in order to show that the semantic approach is to be preferred over the syntactic approach, it is not sufficient to show that the class of verbs selected by each of the diagnostic constructions can be given a semantic characterization; it must also be shown that the semantic characterization will explain the compatibility of the members of a verb class with that construction. For example, in chapter 3 we argue that although the verbs that participate in the causative alternation can be characterized semantically, there is a syntactic component to the explanation of why just these verbs participate in the alternation as they do; if this account is correct, it constitutes support for the syntactic approach. The presence of syntactic and semantic components to the explanations of several of the diagnostics we examine in this book suggests that a verb’s ability to be found in the unaccusative syntactic configuration may be a necessary, but not a sufficient, condition for the verb to manifest some property. This reflects the fact that many constructions are also associated with their own semantic constraints. For example, although resultative phrases in English may be predicated of subjects of unaccusative, but not unergative, verbs, there is a semantically defined subset of unaccusative verbs whose subjects cannot have resultative phrases predicated of them for independent reasons, as we show in section 2.3.2.

Moreover, the semantic properties of the verb may be a necessary, but not a sufficient, condition for passing an unaccusative diagnostic. Such a case is provided by auxiliary selection in Dutch. Both Van Valin (1990) and Zaenen (1993) discuss auxiliary choice as a diagnostic that is sensitive

to a semantic property, namely, telicity. The claim is that all and only telic verbs select the auxiliary *zijn*, the Dutch equivalent of English *be*. Although the connection between the syntactic properties of unaccusative verbs and their selection of the *be* auxiliary in several languages is not well understood (Grimshaw 1987; though see Burzio 1986, Vikner 1991, among others, for some proposals), Everaert (1992) points out that even on a descriptive level the generalization linking auxiliary selection to telicity, as close as it is to being correct, is not entirely accurate. Everaert shows that, at least in Dutch, a sentence that meets the criterion of telicity can nonetheless contain the auxiliary *hebben*, the Dutch counterpart of English *have* and Italian *avere*, if the sentence contains either a light verb construction, as in (11a), or an idiom that involves a verb plus object, as in (11b).

- (11) a. Het vliegtuig heeft een landing gemaakt.
 the plane has a landing made
 ‘The plane has made a landing.’
 (Everaert 1992:4, (12a))
 b. Hij heeft zich uit de voeten gemaakt.
 he has self out of the feet made
 ‘He fled.’
 (Everaert 1992:7, (24b))

The contrast between the selection of the auxiliary *hebben* ‘have’ in the light verb construction in (11a) and the selection of the auxiliary *zijn* ‘be’ in a near paraphrase involving a simple verb with the same meaning in (12) illustrates this point.

- (12) Het vliegtuig is geland.
 the plane is landed
 ‘The plane has landed.’
 (Everaert 1992:4, (11a))

Therefore, even if telicity is the meaning component relevant to auxiliary selection, it is applicable only if the verb phrase is intransitive in a purely *syntactic* way. That is, it is necessary, but not sufficient, that a verb be telic if it is to select *zijn* ‘be’.⁸

Summarizing the difference between the syntactic and semantic approaches to unaccusativity, the syntactic approach takes unaccusativity to be a unified phenomenon: all unaccusative verbs, no matter what their semantic class, share certain syntactic properties (the selection of a direct

in its noncausative intransitive use the external cause argument of the verb is understood as not being lexically specified. In the noncausative use of a verb like *break*, the claim is that the external cause can be left unexpressed, whatever its nature. On the other hand, the unexpressed argument of the unspecified object construction is probably best characterized as being interpreted as the “prototypical” choice for that argument. It does not seem correct to characterize this argument as not being lexically specified since the unexpressed argument must do more than meet the general selectional restrictions on that argument; it must be the most typical argument that meets those restrictions, and in this sense it is predictable rather than not lexically specified. We think that being a prototypical argument is quite different from not being lexically specified. Prototypicality is determined by real-world knowledge; it is not linguistic knowledge. We leave additional investigation of this question for further research.

3.2.5 Apparent Instances of the Causative Alternation

We have characterized causative alternation verbs as externally caused verbs that meet the criteria for detransitivization. Thus, such verbs have a causative lexical semantic representation, the unaccusative use arising when the criteria for detransitivization are met. In section 3.1 we also mentioned the observation cited by Chierchia (1989) that unergative verbs appear to be stable in their intransitivity, a property in part attributable to their monadic lexical semantic representation. However, there are pairs of morphologically identical verbs in English consisting of an internally caused intransitive verb and a transitive verb that means roughly ‘cause to *V*-intransitive’. The existence of such pairs might seem to be problematic for our analysis. In this section we examine several instances of this phenomenon and argue that each represents a different phenomenon from what we have described as the causative alternation. Specifically, we argue that in such causative pairs the relationship between the transitive and intransitive uses is not the same as the one characteristic of causative alternation verbs like *break*. From now on we reserve the term *causative alternation* for the alternation shown by verbs like *break*; we will use the term *causative pair* to refer to any pair of morphologically related transitive and intransitive verbs such that the transitive verb means approximately ‘cause to *V*-intransitive’.

First, we investigate certain agentive verbs that appear in causative pairs, as illustrated in (66)–(68).¹⁵

- (66) a. The soldiers marched to the tents.
b. The general marched the soldiers to the tents.
- (67) a. The horse jumped over the fence.
b. The rider jumped the horse over the fence.
- (68) a. The mouse ran through the maze.
b. We ran the mouse through the maze.

Although these pairs, like those observed with verbs like *break*, involve transitive and intransitive uses of verbs that differ with respect to the notion “cause,” there is evidence that the pairs shown in (66)–(68) do not involve the causative alternation. This phenomenon is exhibited by members of a semantically coherent subgroup of the agentive verbs: agentive verbs of manner of motion. These verbs of motion, which we discuss in more detail in sections 4.1.4 and 5.1.1, describe the manner in which motion takes place, contrasting with verbs of inherently directed motion like *come* and *go*, which describe the direction but not the manner of motion. Various researchers have commented that the causative use of agentive verbs of manner of motion is qualitatively different from that shown by verbs such as *break* (see, for example, Cruse 1972, 1973, Hale and Keyser 1987). Some of them have pointed out that the referent of the direct object in sentences such as (66)–(68) maintains a degree of agentiveness that is uncharacteristic of the objects of verbs that usually participate in the causative alternation or the objects of transitive verbs in general.

The proposal that we are dealing with two distinct phenomena receives further support from another fact, which to our knowledge has never been accounted for in the literature, although it is mentioned briefly by Pinker (1989): the directional phrases that are optional in the intransitive use of the agentive verbs of manner of motion are obligatory in their transitive use.¹⁶

- (69) a. The soldiers marched (to the tents).
b. The general marched the soldiers to the tents.
c. ??The general marched the soldiers.
- (70) a. The horse jumped (over the fence).
b. The rider jumped the horse over the fence.
c. ?The rider jumped the horse.
- (71) a. The mouse ran (through the maze).
b. We ran the mouse through the maze.
c. *We ran the mouse.

This distinctive property of the agentive verbs of manner of motion is highlighted when these verbs are contrasted with nonagentive verbs of manner of motion such as *roll* and *bounce*—Jespersen's (1927) "move" verbs—which, as shown in (72), do not require a directional phrase in either their transitive or intransitive use.

- (72) a. The ball bounced/rolled (into the room).
 b. The boys bounced/rolled the ball (into the room).

Additional evidence that a distinct phenomenon is involved comes from the observation that the "cause" argument in such causatives can only be an agent in the true sense, never an instrument or a natural force, as pointed out by Cruse (1972) and Reinhart (1991).

- (73) a. *The downpour marched the soldiers to the tents.
 b. *The tear gas marched the soldiers to the tents.
 (74) a. *The lightning jumped the horse over the fence.
 b. *The firecracker jumped the horse over the fence.
 c. *The whip jumped the horse over the fence.

Given the fundamentally different properties of the causative pairs involving agentive verbs of manner of motion and those involving causative alternation verbs like *break*, we conclude that there is no need to abandon our proposal that only externally caused verbs show the causative alternation. But what about the causative pairs involving internally caused verbs? Our analysis does not preclude the existence of such pairs; it simply predicts that they cannot represent the same phenomenon as the causative pairs associated with verbs like *break* since they could not have been derived in the same way. Specifically, since internally caused verbs, unlike externally caused verbs, are not causative verbs basically, the noncausative use cannot be derived from detransitivizing the causative use. However, there is no reason not to assume that the agentive verbs of manner of motion, like other internally caused verbs, are basically monadic noncausative verbs and that the transitive members of the pairs in (66)–(68) are actually derived by a process of causativization. We propose that this is the case.¹⁷ (We return in section 5.1.1.2 to the question of why the directional phrase is needed in the English causative uses.)

Evidence for a causativization analysis comes from the morphological relationship between the members of the causative pairs with agentive verbs of manner of motion. If, as we have been assuming, the morphologi-

cally marked member of a causative pair is the derived member, then in languages that, unlike English, differentiate the members of causative pairs morphologically, it should be possible to verify the causativization analysis. We would expect that in such languages the causative member of a causative pair involving an internally caused verb should be morphologically marked. Investigations of several languages of this type suggest that the prediction is borne out.

Consider first Modern Hebrew, where verbs are formed from triconsonantal roots. A single root can give rise to up to seven basic verb patterns, many of which show strong semantic correlates (Berman 1978, Bolozky 1982, Bolozky and Saad 1983, Glinert 1989, among others). The most productive morphological pattern for intransitive/transitive causative pairs with externally caused verbs, particularly verbs of change of state, is for the transitive causative verb to be in the Pi'el pattern and the intransitive verb to be in the derived Hitpa'el pattern, as in the pairs in (75) and (76).

- (75) a. Hu kimet et ha-bad.
 he creased ACC the-material
 'He creased the material.'
 b. Ha-bad hitkamet.
 the-material creased
 'The material creased.'
 (76) a. Hu kirer et ha-oxel.
 he cooled ACC the-food
 'He cooled the food.'
 b. Ha-oxel hitkarer.
 the-food cooled
 'The food cooled.'

The intransitive form of verbs with causatives in the Pi'el pattern always involves the Hitpa'el pattern (Bolozky 1982, Rappaport 1979). In fact, the Pi'el-Hitpa'el pairing is used for all semantically appropriate new coinages; see Berman 1980 for evidence for this point from child language acquisition and Bolozky and Saad 1983 for evidence involving the coining of novel denominal verbs. Morphologically, the Hitpa'el pattern is derived from the Pi'el pattern by affixation of the prefix *hit-*; the vowel change accompanying the affixation is due to a regular phonological process (Prince 1975). Berman (1980) also argues that the Pi'el pattern is basic and the Hitpa'el pattern is derived.

Modern Hebrew differs from English in allowing to a certain extent the formation of causatives of verbs describing internally caused eventualities, including some agentive verbs of manner of motion. What is striking is that the morphological relationship between the causative and noncausative uses of such verbs is invariably different from that associated with verbs describing externally caused eventualities. With internally caused verbs, the noncausative form is the underived form, appearing in the Pa'al pattern, and the causative form is the derived form, appearing in the Hif'il pattern. The examples in (77)–(80) illustrate this point, which also emerges from the discussion in Bolozky 1982.¹⁸

- (77) a. Hu rakad.
he danced
'He danced.'
- b. Ha-nagan hirkid oto.
the-musician made dance him
'The musician made him dance.'
- (78) a. Hu rac.
he ran
'He ran.'
- b. Ha-meamen heric oto.
the-coach made run him
'The coach made him run.'
- (79) a. Hu kafac.
he jumped
'He jumped.'
- b. Ha-ra'aš hikpic oto.
the-noise made jump him
'The noise made him jump.'
- (80) a. Ani caxakti.
I laughed
'I laughed.'
- b. Ha-yeled hicxik oti.
the-boy made laugh me
'The boy made me laugh.'

Since the Modern Hebrew process involves causative morphology, its scope is wider than the scope of the English process. The Hebrew process is found with a range of other internally caused verbs; the English process

is productive only with a semantically coherent subset of the internally caused verbs (see section 5.1.1.2).

Hale and Keyser (1987) cite similar evidence from Berber, Navajo, Warlpiri, and Winnebago. They write, "In Athapaskan languages, for example, the ergative alternation [the causative alternation] is marked in the simplest manner, by choice of the so-called 'classifier' (an element appearing in immediate prestem position correlating very roughly with transitivity), while the transitivization of 'unergative' verbs like *walk* and *run* involves not only this classifier element but special causative prefix morphology as well" (1987:25), pointing the reader to entries in Young and Morgan's (1980) dictionary of Navajo.

Agentive verbs of manner of motion are not the only internally caused verbs that show causative uses in English. Apparent instances of the causative alternation are found sporadically throughout the class of nonagentive internally caused verbs, as in (81) from Smith 1970, although they are observed most frequently, but not exclusively, among the verbs of emission, especially among the verbs of sound emission.

- (81) a. The baby burped.
b. The nurse burped the baby. (Smith 1970:107, (36a))
- (82) a. The doorbell buzzed/rang.
b. The postman buzzed/rang the doorbell.
- (83) a. The flashlight beamed/shone.
b. We beamed/shone the flashlight.

We will show that these are also not instances of the causative alternation as we have defined it. The pair in (81) is what we term an *idiosyncratic* pair, in the sense that it is a one-of-a-kind pair that is not representative of any sort of regular type of causativization. The pairs in (82) and (83) are what we call *spurious* causative pairs; by "spurious" we mean that what appears to be a causative pair involves two distinct verb meanings—one of them causative—that are not derivationally related.

Consider first the *burp* example in (81). As Smith (1970) points out, the verb *burp* enters into such causative pairs only for certain highly specific choices of objects for the transitive use.

- (84) a. The baby burped.
b. The nurse burped the baby. (Smith 1970:107, (36a))
- (85) a. The doctor burped.
b. *The nurse burped the doctor. (Smith 1970:107, (36c))

Not only are there restrictions on the transitive object, but *burp* is one of two verbs of bodily process that show this phenomenon. The other is the verb *bleed*, which is used in the sense of 'cause to *bleed*-intransitive' in a very restricted way. For instance, it is not possible to use *bleed* as a causative if one cuts one's hand on a knife.

- (86) a. The patient bled.
b. The doctor bled the patient.

Furthermore, as expected if they are internally caused verbs, other verbs of bodily process do not show causative uses at all.

- (87) a. Kay coughed./*The doctor coughed Kay.
b. Pat yawned./*The sleeping pills yawned Pat.
c. Tony sneezed./*The pollen sneezed Tony.

As there is no evidence that the causative uses of *bleed* and *burp* represent a regular process of causativization as applied to a particular verb class, we suggest that they represent idiosyncratic instances of causativization. We propose that the sporadic causative coinages that turn up in everyday speech, such as the examples in (88), represent the same phenomenon.

- (88) a. What's fussing her? [A Grandpa wondering why baby is crying] (Pinker 1989:153, (4.44))
b. "He lunched me to-day in terrific style ..." [G. B. Stern, *The Matriarch*, 261]

Consider next the examples of verbs of emission in (82) and (83). Some, though by no means all, verbs of emission can be found in causative pairs. Among the verbs of light emission, besides the verbs *beam* and *shine*, the verb *flash* is found in causative pairs. Similarly, among verbs of sound emission, besides the verbs *buzz* and *ring*, a range of verbs are found in causative pairs, including *clatter*, *clink*, *jingle*, *rattle*, *rustle*, and *toll*.

Unlike the agentive verbs of manner of motion, the nonagentive internally caused verbs, including the verbs of emission, do not require co-occurring directional phrases in their causative use. However, the causative uses of verbs of emission resemble the causative uses of the agentive verbs of manner of motion in one respect: they also do not permit instrument or natural force subjects.

- (89) a. *The short circuit rang the bell.
b. *The dishwasher clattered the dishes.

In this respect, both of these classes contrast with the causative uses of verbs like *break*.

The relationship between the causative and noncausative uses of verbs of emission also differs from that associated with the causative and noncausative uses of causative alternation verbs. With a causative alternation verb, the causative use entails the noncausative use, so that if someone breaks something, then that thing breaks. In contrast, verbs of emission do not demonstrate this pattern. Not only do they show causative uses only for a very restricted range of emitters, as the examples in (90)–(93) show, but the relationship between the causative and noncausative uses is different from that shown by the *break* verbs. For example, if someone buzzes a doorbell or flashes a light, it is odd to describe the very same event by saying that the doorbell buzzed or the light flashed. In contrast, if someone breaks a window, then it is possible to describe the same event with the sentence *The window broke*.

- (90) a. The doorbell buzzed.
b. The postman buzzed the doorbell.
(91) a. The bees buzzed.
b. *The postman buzzed the bees.
(92) a. The light flashed.
b. The stagehand flashed the light.
(93) a. The lightning flashed.
b. *The cloud seeding flashed the lightning.

This difference supports treating the causative pairs involving verbs of emission as representing a phenomenon other than the causative alternation.

How can this pattern of properties be explained? We proposed in section 3.2.2 that certain verbs have meanings that allow them to describe either an internally caused or an externally caused eventuality. Although in section 3.2.1 we proposed that verbs of emission describe internally caused eventualities, we suggest that some verbs of emission are actually compatible with a dual classification as either internally or externally caused verbs. The transitive causative uses of verbs of sound and light emission in (82) and (83), we argue in B. Levin and Rappaport Hovav 1994, represent the externally caused option, and the intransitive uses they are paired with represent the internally caused option.

Consider, for example, the verb *buzz*. When used as a verb that describes a particular animal sound, this verb clearly describes an internally

caused eventuality since the sound is emitted under the emitter's own control. It also describes an internally caused eventuality when used to describe the sound emitted by certain devices, such as doorbells and buzzers, which can in some circumstances be conceptualized as emitting the sound under their own control. However, certain devices—many of them the same ones that can be conceptualized as self-controlled—can be made to emit the sound known as a *buzz* by a person who manipulates the device; this is the externally caused option. To the extent that the set of emitters that can be manipulated to emit a particular sound and the set of emitters that can be conceptualized as emitting the same sound under their own control overlap, the verb describing the emission of that sound will show internally and externally caused uses with the same emitters. Consequently, apparent causative pairs, such as the one in (90), arise. When an emitter belongs to only one of these two sets, then the verb shows only one of the two options for that emitter. As an illustration, consider the pair in (91): bees cannot be externally caused to emit a buzz, so that there is no externally caused use of *buzz*, such as **The postman buzzed the bees*, paired with the internally caused use of *buzz* in *The bees buzzed*.

There are several factors that limit the number of apparent causative pairs with verbs of sound emission. Most important, there are restrictions on the set of verbs that can be found in such pairs. The sounds associated with some verbs of sound emission, such as the verb *burble*, are necessarily internally caused, and, thus, these verbs will not show externally caused uses at all. In general, externally caused uses are found with verbs describing sounds emitted through contact between two surfaces, such as *jingle*, *rattle*, and *rustle*. It is a matter of real-world knowledge whether the emission of a particular type of sound involves internal or external causation. The number of apparent causative pairs is further limited because even when a verb of sound emission permits an externally caused use, such uses can arise only with certain emitters. In the externally caused use, the relevant sound must be emitted by manipulable entities such as coins, dishes, keys, papers, doorbells, and buzzers under direct manipulation. If the emitters are not manipulable, then the emission of the sound cannot be externally caused.

The relationship between the two members of the causative pairs with verbs of emission can be made explicit using the lexical semantic representations introduced in chapter 1. The constant associated with each verb of emission represents what is distinct about that verb; for example, for a

verb of sound emission it would be the characteristic sound associated with that verb. Suppose that the constant associated with a verb of emission showing causative and noncausative uses is compatible either with the lexical semantic template of an internally caused verb or with that of an externally caused verb. If so, a causative pair associated with such a verb of emission involves two distinct lexical semantic representations that happen to share a single constant and thus the same "name." They are not, however, related by any productive rule. It is for this reason that we labeled these "spurious" causative pairs. Our initial investigations suggest that the causative pairs involving verbs of emission merit further study, showing behavior that is more complicated and less uniform than the data presented here suggest; however, we believe that their behavior patterns can all be understood in terms of the discussion here and in sections 5.1.2.2 and 5.3.

Summarizing this section, English has two types of regularly formed causative pairs. The first, and by far more pervasive, involves externally caused verbs, which, although basically dyadic, in specific circumstances undergo a process of detransitivization. English has a more restricted phenomenon of causativization of agentive verbs of manner of motion in the presence of a directional phrase. We return to these alternations in the next two chapters, where we provide an explanation for why internally caused verbs cannot be causativized, except in special conditions.

3.3 Verbs of Existence and Appearance

So far in this chapter we have focused on the causative alternation as a device for better understanding how unaccusative verbs differ from unergative verbs. In this section we introduce a fundamental division within the class of unaccusative verbs that is motivated by behavior with respect to the causative alternation. Specifically, we show in section 3.3.2 that the arguments used in favor of a causative lexical semantic analysis of one class of unaccusative verbs indicate that the causative analysis is inappropriate for another class of unaccusative verbs. Verbs of existence such as *exist*, *flourish*, and *thrive* and verbs of appearance such as *appear*, *emerge*, and *arise*, although all bona fide unaccusative verbs, do not participate in the causative alternation. We show that this property is not characteristic only of English, but is typical of a variety of languages. We show that they are nevertheless dyadic even though they do not have the causative lexical