

Chapter 4

The Linking of Arguments

In the previous chapter we investigated the basic adicity of a range of intransitive verbs and began to isolate certain lexical semantic distinctions relevant to determining a verb's argument structure. We sketched properties of the argument structures of various types of intransitive verbs, but not in any systematic way. In this chapter we focus on the explicit formulation of the linking rules that are responsible for determining the argument structures of a wide variety of intransitive verbs and, hence, the syntactic expression of their arguments. In section 4.1 we lay out the four linking rules we will make use of. In section 4.2 we examine the interactions between these rules. In section 4.3 we compare our approach with other proposals concerning the lexical semantic determinants of argument expression.

4.1 The Linking Rules

4.1.1 The Immediate Cause Linking Rule

In the previous chapter the distinction between internally and externally caused verbs was shown to be pertinent to determining basic adicity. The notions of internal and external causation allow the identification of the participant in an eventuality that is the immediate cause of the eventuality, if there is such a participant. We call such a participant the *immediate cause*, and we suggest that the linking rule that determines which argument of a verb is its external argument makes reference to this notion.¹

(1) *Immediate Cause Linking Rule*

The argument of a verb that denotes the immediate cause of the eventuality described by that verb is its external argument.

The Immediate Cause Linking Rule will apply to both internally and

externally caused verbs and to both transitive and intransitive verbs. We begin by illustrating its applicability to a variety of internally caused verbs, showing that it correctly predicts their unergative status. We will then discuss how this linking rule is applicable to externally caused verbs.

For intransitive verbs, the Immediate Cause Linking Rule captures the generalization that internally caused verbs typically receive an unergative classification since their sole argument is the immediate cause (although we will show in sections 4.2.1 and 5.1 that not all internally caused verbs—and specifically not all agentive verbs—are unergative). It is well known that a large subclass of unergative verbs are agentive. Since, as we have already shown, agentivity is subsumed under internal causation, agentive monadic verbs will generally be classified by this linking rule as unergative. Because the unergative status of agentive monadic verbs has been illustrated so frequently in the literature, we will only briefly justify this classification here. Agentive verbs figure prominently on the list of verbs that C. Rosen (1984) has shown to be unergative in Italian; some of these verbs are cited in the perfect in (2) to show that they take the auxiliary *avere* ‘have’, an indicator of their unergative status.

- (2) ha sorriso ‘smiled’, ha leticato ‘quarreled’, ha viaggiato ‘traveled’,
 ha scherzato ‘joked’, ha chiacchierato ‘chatted’, ha telefonato
 ‘telephoned’, ... (C. Rosen 1984:44, (19))

In English evidence for the unergative classification of monadic agentive verbs is provided by the resultative construction. These verbs are found with resultative phrases predicated of a surface direct object, rather than predicated directly of their surface subject, as would be the case with unaccusative verbs.

- (3) a. They were fluent and brilliant talkers; they could said Rachel
 “chat a dormouse out of its winter sleep” ... [J. Aiken, *Jane Fairfax*, 97]
 b. “Miss Bates, are you mad to let your niece sing herself hoarse in
 this manner ...” [J. Aiken, *Jane Fairfax*, 200]
 c. I ... ruthlessly roused Mr. Contreras by knocking on his door
 until the dog barked him awake. [S. Paretsky, *Blood Shot*, 183]

Agentive monadic verbs are found not only in the unergative resultative pattern, but also in a related construction, exemplified in (4), known as the *X’s way construction* (see A. Goldberg 1994a, 1994b, Jackendoff 1990, Marantz 1992, Salkoff 1988, and section 5.1.3 for further discussion).

- (4) a. ... three dozen Hare Krishnas danced and sang their way through Gorky Park on Sunday ... [AP Newswire 1990, 29138379]
 b. ... corporate executives wined, dined and golfed their way to a record 4.98 trillion yen or about \$36.5 billion ... [AP Newswire 1990, 45776417]
 c. As soon as we had smiled our way out of our new friends' sight ... [L. Haire-Sargeant, *H.*—, 277]

This construction takes its name from the NP *X's way*, which appears following the verb. As in the resultative construction, a result XP is predicated of this NP; however, in this construction, unlike in the resultative construction, the noun that heads the postverbal NP is invariant. This construction has been argued to be a diagnostic for unergative verbs (Marantz 1992). Unergative verbs have the ability to assign accusative Case (Burzio 1986), and, furthermore, English allows the marked option of accusative Case assignment to nonsubcategorized objects. Together these two properties give rise to the *X's way* construction, by allowing an unergative verb to be found with the phrase *X's way* as a postverbal NP, while retaining its original syntactic classification. Unaccusative verbs do not appear in this construction, presumably because they lack the ability to assign Case to a postverbal NP. As discussed by Burzio (1986), the ability to assign Case correlates with the presence of an external argument, a property of unergative, but not unaccusative, verbs.

The Immediate Cause Linking Rule will also classify verbs such as *cough*, *shiver*, *sleep*, *snore*, *tremble*, and *yawn* as unergative, although they are more often than not nonagentive, since as shown in chapter 3, such verbs can nonetheless be considered internally caused. In English these verbs do not have lexical causative variants, suggesting that they indeed are properly classified as internally caused verbs. Evidence for their unergative classification comes from Italian, where these verbs all select the auxiliary *avere* 'have' (Perlmutter 1989, C. Rosen 1984, among others).²

- (5) *ha tossito* 'coughed', *ha dormito* 'slept', *ha russato* 'snored', *ha tremato* 'trembled', ... (C. Rosen 1984:44, (19))

In English support for classifying these verbs as unergative comes from the resultative construction and the related *X's way* construction. Not only are they found in the unergative, and not the unaccusative, resultative pattern, as shown in (6), but they are also found in the *X's way* construction, as shown in (7).

- (6) a. ... poor Sam had been wretchedly ill and had coughed himself into a haemorrhage ... [J. Aiken, *Jane Fairfax*, 98]
 b. You ... have not slept yourself sober. [1839 Dickens, *Nich. Nickl.*, 738; cited in Visser 1963:584]
- (7) a. I was about to cough my way out the door, when this man crept to the podium. [B. Pesetsky, *The Late Night Muse*, 24]
 b. ... while the half-child half-young-woman shivered her way through the dangerous memory ... [ThEdge; Oxford Corpus]
 c. ... when Tony had yawned his happy way to bed ... [B. Lehmann, *Rumour of Heaven*, 135]

4.1.1.1 Verbs of Emission A more interesting illustration of the scope of the Immediate Cause Linking Rule involves the verbs of emission introduced in chapter 3. On the basis of their meaning, it is not immediately apparent whether these verbs are best classified as unaccusative or unergative. The semantic criteria that are most frequently considered to be indicators of class membership are not pertinent to them. Unlike the single argument of most unergative verbs, their single argument is usually not agentive and does not show protagonist control. Nor does the argument of a verb of emission undergo a change of state like the single argument of many unaccusative verbs. In addition, most of these verbs do not describe eventualities that are temporally bounded. (There are exceptions like the verbs *flash* and *hoot*, which can describe one flash or hoot or a series of flashes or hoots.)

However, if, as we suggested in chapter 3, the verbs of emission are internally caused, then they are predicted to be unergative since the Immediate Cause Linking Rule should apply to their argument, which is the emitter. Indeed, the evidence from unaccusative diagnostics overwhelmingly suggests that these verbs are unergative. In English the most convincing evidence comes from the ability of these verbs to be found not only in the unergative resultative pattern, but also in the *X's way* construction, as exemplified in (8)–(11) using members of the different subclasses.

- (8) The beacons flared the news through the land. [Henderson I 92; cited in Lindkvist 1976:89, sec. 233, 4]
- (9) a. The phone rang me out of a dreamless oblivion at seven-fifteen. [C. Brennan, *Headhunt*, 82]
 b. Each morning the train groans and creaks its way out of the 20th century into a world that differs little from what Ottoman

passengers saw from their carriages a century ago. [C. Hedges, "Heavy Snow in Israel Helps the Trains, Sort Of," 6]

- c. Then he watched as it gurgled its way into a whiskey tumbler.
[M. Grimes, *The Five Bells and Bladestone*, 200]

- (10) a. The skunk stank us out of house and home.
b. He stank his smelly way home.

- (11) At Victoria Falls the Zambezi is rife with tumult, boiling and bubbling its way through basalt gorges ... [P. L. Brown, "Dodging Hippos on the Zambezi," 14]

Another type of evidence that suggests that in English the verbs of emission are unergative involves derivational morphology. In English *-er* nominals are typically formed from unergative, but not unaccusative, intransitive verbs (B. Levin and Rappaport 1988, Rappaport Hovav and B. Levin 1992). The existence of *-er* nominals related to many verbs of emission is also consistent with an unergative classification.

- (12) beeper, buzzer, clicker, ringer, squeaker, ...; blinker, flasher, sparkler, ...; stinker; bubbler, gusher, ...

Furthermore, as we point out in B. Levin and Rappaport 1988, there is evidence that these verbs are unergative in other languages as well. These verbs behave like unergative verbs with respect to auxiliary selection in Italian, Dutch, and Basque. The Italian counterparts of these verbs invariably select the auxiliary *avere* 'have', rather than the unaccusative auxiliary *essere* 'be'.

- (13) ha scintillato 'sparkled', ha puzzato 'stank', ha brillato 'shone'
(C. Rosen 1984:64, (77))

Similar examples can be constructed for Dutch, where the verbs of emission take the auxiliary *hebben* 'have'.

- (14) a. De zon heeft geschenen.
the sun has shined
'The sun shone.'
b. De cello heeft geglansd, maar hij is nu oud, en dof geworden.
the cello has gleamed but he is now old and dull
become
'The cello gleamed, but it is old now, and has become dull.'

- c. De air-conditioning heeft gebromd/gezoemd
the air conditioning has hummed
(maar nu niet meer).
(but not any more)
'The air conditioning hummed (but not any more).'
- d. De sleepboot heeft eenmaal getoeterd.
the tugboat has once hooted
'The tugboat hooted once.'
- e. De kerkklokken hebben geluid.
the church bells have rung
'The church bells rang.'
- f. Het afval heeft gestonken.
the garbage has stunk
'The garbage stank.'
- g. De fontein heeft geborreld.
the fountain has bubbled
'The fountain bubbled.'

Basque also has two auxiliaries: *izan* 'be', which is used only with unaccusative verbs, and *ukan* 'have', which is used elsewhere (B. Levin 1989). The list of single-argument verbs taking *ukan* rather than *izan* cited in Lafitte's (1979) grammar of Basque includes a few verbs of emission.

(15) *argitu* 'shine', *dirdiratu* 'shine', *disdiratu* 'sparkle'

The small number of verbs of emission included in Lafitte's list is not surprising given that the intransitive verb class of Basque is almost exclusively made up of unaccusative verbs, the class of unergative intransitive verbs in Basque being much smaller than that of other languages. The Basque counterparts of the most commonly cited agentive unergative verbs of other languages are expressed periphrastically in a light verb construction headed by the verb *egin* 'do/make' together with a noun. For example, the Basque counterparts of English *laugh* and *work* are *barre egin* 'laugh do' and *lan egin* 'work do'. The verb *egin*, like other transitive verbs, takes the auxiliary *ukan* 'have'. Interestingly, the Basque counterparts of some English verbs of emission take the form of a noun plus the verb *egin* 'do/make', as illustrated in (16).

(16) *giltz-zarata egin* 'jingle', *kirrinka egin* 'creak', *orroe egin* 'roar',
tik-tak egin 'tick'; *diz diz egin* 'shine, glow, sparkle', *ñirñir egin*
'sparkle, twinkle, flicker, glimmer' (Aulestia and White 1990)

Thus, Basque makes use of the same device for expressing the counterparts of verbs of emission as it does for expressing the counterparts of agentive monadic verbs, supporting the classification of verbs of emission as unergative.

Before concluding this section, we comment on the analysis of the verbs of emission presented by Perlmutter (1978), who included these verbs among the unaccusative verbs because of their failure to undergo impersonal passivization in Dutch. There are, however, independent reasons for this property, so that it need not preclude an unergative classification of these verbs.

Because Perlmutter (1978) assumed that the existence of an impersonal passive signaled unergative classification and its nonexistence signaled unaccusative classification, he concluded that verbs of emission were unaccusative. The impersonal passive diagnostic has been the subject of some controversy in the literature on unaccusativity. Zaenen (1993), for example, claims that it cannot be used as an unergative diagnostic, proposing that compatibility with impersonal passivization in Dutch is determined by the semantic notion of protagonist control (see also chapter 1). She points out that some Dutch verbs that are clearly unergative cannot appear in impersonal passives, citing examples such as (17), attributing their behavior to the fact that they are not protagonist control verbs.

- (17) *Er werd (door de man) gebloed.
 there was (by the man) bled
 'There was bled (by the man).'
 (Zaenen 1993:131, (7b))

Moorcroft (1985), Shannon (1987), and others also cite an agentivity requirement on German impersonal passives. Nevertheless, we take impersonal passivization to be an unaccusative diagnostic, following Hoekstra and Mulder (1990), Perlmutter (1978), Marantz (1984), and others, but we take its sensitivity to protagonist control to be an indication that it is a necessary but not a sufficient condition that a verb be unergative for it to permit impersonal passivization. That is, only unergative verbs—although not all unergative verbs—will be found in this construction.³

Given the semantic restriction on impersonal passivization, this diagnostic can only be used to provide information about monadic verbs whose arguments are animate and hence could show protagonist control. Since the arguments of verbs of emission are typically inanimate, these verbs could not be expected to show impersonal passives even if they were

unergative, so that this diagnostic cannot be used to classify them. But if one of these verbs took an appropriate argument that is capable of protagonist control, then given their unergative classification, we might expect them to show an impersonal passive. In fact, Zaenen (1993) points out that (18), cited by Perlmutter (1978) as evidence that verbs of emission do not allow impersonal passives, is only ruled out on a nonagentive interpretation (where *krengen* is understood as ‘carcasses’), but is acceptable if the emission of the stimulus is understood to be intentional (i.e., if *krengen* is understood as ‘nasty women’, giving a protagonist control interpretation).

- (18) Er werd door de krengen gestonken.
 there is by the nasty women/carcasses stunk
 ‘There is stunk by the nasty women/*carcasses.’
 (Zaenen 1993:139, (37), Perlmutter 1978:171, (71b))

4.1.1.2 Verbs of Spatial Configuration The Immediate Cause Linking Rule will also apply to the verbs of spatial configuration in their maintain position sense, since they are internally caused in this sense, making them unergative. We single out this class for mention since the exact aspectual classification of these verbs is a matter of debate in the literature on aspect (see, for example, Dowty 1979 and note 14 of this chapter). It is clear, however, that these verbs can be considered internally caused when they are agentive, as they are in the maintain position sense.

As discussed briefly in section 3.3.3, the verbs of spatial configuration show complex behavior, allowing both agentive and nonagentive monadic noncausative uses. When nonagentive, these verbs describe the position of their subject with respect to some location. When agentive, they can describe either the assumption or the maintenance of a position. We thus distinguished between the simple position sense, the maintain position sense, and the assume position sense. In this section we will not be concerned with the assume position sense (but see the discussion in section 4.2.3). What is relevant is that the other two senses, which are both monadic, differ according to whether or not they involve internal causation. We predict that the Immediate Cause Linking Rule should apply to these verbs in their maintain position sense, classifying them as unergative, since it is this sense that involves internal causation. (Another linking rule will determine their classification on the simple position reading. They will be classified as unaccusative on this reading; see section 4.1.3.)

The claim about class membership can be tested in English and Dutch. Hoekstra and Mulder (1990), for example, provide evidence from Dutch that these verbs are found in the unergative resultative pattern when they take animate subjects, suggesting an unergative analysis.

- (19) a. dat hij zijn rug door gelegen heeft
 that he his back through lain has
 ‘that he lay his back sore’
 (Hoekstra and Mulder 1990:12, (20a))
- b. dat hij een gat in de stoel gezeten heeft
 that he a hole in the chair sat has
 ‘that he sat a hole in the chair’
 (Hoekstra and Mulder 1990:12, (20b))

In English the resultative construction is not an appropriate diagnostic to apply to these verbs since in English this construction is preferred with nonstative verbs (Carrier and Randall, *in press*; see also the discussion in section 2.3.3); nevertheless, we find the constructed example in (20) is not entirely unacceptable.

- (20) ?She knelt her knees sore scrubbing the marble floors.

Actually, as Hoekstra and Mulder themselves note, and as M. Everaert also informs us, not all Dutch speakers accept the resultatives in (19). It is likely that the stativity restriction that applies to English resultative constructions applies in Dutch as well, with speakers differing in their classification of agentive verbs of spatial configuration as state or activity verbs in these examples. Moving beyond the resultative construction, even in English verbs of spatial configuration on the maintain position sense can sometimes appear with nonsubcategorized objects, as in (21), an indication of unergative status.

- (21) Carla impatiently sat the meeting out.

Further evidence that the maintain position sense receives an unergative classification in English comes from the prepositional passive construction, sometimes also known as the “pseudopassive,” proposed as an unaccusative diagnostic by Perlmutter and Postal (1984). Perlmutter and Postal present evidence that prepositional passivization in English, like impersonal passivization in languages such as Dutch and Turkish (Perlmutter 1978), is possible only with unergative verbs. Prepositional passives also resemble impersonal passives in showing an animacy restriction: it appears that only those unergative verbs that take an animate

subject are eligible for this construction.⁴ Verbs such as *sit* and *stand* are readily found in the prepositional passive construction with the maintain position interpretation, as shown in (22); therefore, these verbs must be unergative on this interpretation.

- (22) a. This platform has been stood on by an ex-president.
 b. These chairs have been sat on by the Queen's children.

As part of a study of Dutch verbs of spatial configuration, Mulder and Wehrmann (1989) demonstrate that verbs of spatial configuration with animate subjects are found in the Dutch middle construction, a construction that they say is possible with unergative and transitive, but not unaccusative, verbs.

- (23) Het zit makkelijk in deze stoel/met je benen over elkaar.
 it sits comfortably in this chair/with your legs crossed
 (Mulder and Wehrmann 1989:119, (45b))

This behavior, they note, supports the unergative classification of these verbs.

4.1.1.3 Other Consequences of the Immediate Cause Linking Rule As mentioned above, the Immediate Cause Linking Rule also applies to transitive verbs in externally caused eventualities. The external cause in such instances can be considered an immediate cause, and therefore the Immediate Cause Linking Rule determines that the argument denoting such an external cause will be an external argument. For example, the Immediate Cause Linking Rule applies to the external arguments of verbs such as transitive *break*, transitive *hang*, and *destroy*.⁵

The Immediate Cause Linking Rule has another advantage: it explains why internally caused verbs are unable to undergo lexical causativization. The Immediate Cause Linking Rule associates the single argument of this type of verb—an “internal cause”—with the external argument position in the argument structure. The causative counterpart of such a verb would involve the introduction of an external cause, which itself must be the external argument of the causative verb by the Immediate Cause Linking Rule. Since the linking of the internal cause argument would not be affected by the introduction of the external cause, the external cause would compete for the single external argument slot in the argument structure with the verb's own argument. The unavailability of sufficient positions for the two causes would prevent the existence of lexical causative uses of internally caused verbs.

Pinker (1989) proposes another explanation for why internally caused verbs do not have causative uses in English. He points out that transitive verbs in English can only express direct causation. The introduction of an external cause for internally caused verbs cannot yield a lexical semantic representation of the type associated with direct causation, since by its very nature an internally caused eventuality cannot be construed as being directly caused. We agree that this property is probably implicated in the noncausativizability of such verbs. We argue in section 4.2.1 that there are internally caused unaccusative verbs—that is, internally caused verbs whose immediate cause is a direct internal argument. Although there would be no competition for the external argument position if a causative was formed from such a verb, nevertheless, these verbs do not have lexical causatives presumably for the reasons suggested by Pinker. However, as we have shown in section 3.2.5, there are certain internally caused verbs that do causativize regularly under specific syntactic conditions (the presence of a directional PP). These are the agentive verbs of manner of motion. This lexical process of causativization must indeed be marked, given the observation that transitive verbs in English can only express direct causation. But if we are correct in suggesting, as we do in chapter 5, that the presence of the directional PP syntactically licenses the causativization process, then it appears that syntactic factors do enter into the explanation of the general lack of lexical causatives of internally caused verbs.

In the absence of lexical causatives, the causative of an internally caused verb is expressed periphrastically using whatever mechanism a language makes available for the productive formation of causatives, whether by the use of a causative verb or a causative morpheme. Following Baker (1988a), Marantz (1984), and S. Rosen (1989), among others, we assume that such causative verbs or morphemes have their own argument structure, so that general principles involving the merger of predicates will determine which of the competing arguments will be expressed as subject. We then make an interesting prediction that is easily tested: only languages with causative morphemes will allow unergative verbs to undergo a productive lexical process of causativization. We do not know of any counterexamples and leave it for further research to investigate this prediction more fully.

4.1.2 The Directed Change Linking Rule

Next we introduce a linking rule that has substantial responsibility for the linking of internal arguments.

(24) *Directed Change Linking Rule*

The argument of a verb that corresponds to the entity undergoing the directed change described by that verb is its direct internal argument.

Most obviously, this rule is intended to apply to verbs of change of state such as *break*; hence, it can be viewed as subsuming and replacing the Change-of-State Linking Rule from chapter 2.⁶ The Immediate Cause Linking Rule ensures that when a verb like *break* is used transitively, the external cause will be the external argument, and the Directed Change Linking Rule ensures that the passive participant will be the direct internal argument. When a verb like *break* is used intransitively, only the passive participant is projected into the argument structure since the external cause is lexically bound (see section 3.2.4). The Directed Change Linking Rule will again apply, and this argument will be the direct internal argument. This linking is consistent with the observation that these verbs behave like unaccusatives when they take a single argument; we review the data for considering such verbs to be unaccusative below. Since in English these verbs have S-Structure subjects when they take a single argument, this argument, although a direct internal argument and hence linked to the D-Structure object position, must assume the subject relation at S-Structure, presumably as a consequence of independent syntactic principles. The typical GB account of the expression of the arguments of such verbs makes reference to the Case Filter, Burzio's Generalization, and the Extended Projection Principle (Burzio 1981, Rothstein 1983); we do not go into details here. (See Bresnan and Zaenen 1990 for an account within LFG's Lexical Mapping Theory.)

When their external cause is left unspecified under the conditions described in chapter 3, the verbs of change of state are among the prototypical unaccusative verbs, as predicted by the Directed Change Linking Rule. There is plenty of evidence in favor of this classification. We have already shown that these verbs are among the canonical causative alternation verbs, and we have argued that the causative alternation is an unaccusative diagnostic. These verbs also pattern like unaccusatives with respect to the resultative construction.

- (25) a. The bag broke open.
 b. The toast burned black.
 c. The ice froze solid.

In addition, in languages that show a distinct auxiliary for unaccusative

verbs, the counterparts of these verbs take the unaccusative auxiliary. For example, in Italian they take the auxiliary *essere* ‘be’, as shown in (26), and in Basque they take the auxiliary *izan* ‘be’, as shown in (27).

- (26) a. Gianni ha aperto la porta.
Gianni has opened the door
‘Gianni opened the door.’
b. La porta si è aperta.
the door REFL is opened
‘The door opened.’
- (27) a. Miren-ek atea ireki du.
Miren-ERG door (ABS) open 3SABS-have-3SERG
‘Miren opened the door.’
b. Atea ireki da.
door (ABS) open 3SABS-be
‘The door opened.’

Finally, consistent with an unaccusative classification, these verbs are not attested with cognate objects or with nonsubcategorized objects with resultative phrases predicated of them (see section 2.1.4).

- (28) a. *The mirror broke a jagged break.
b. *The toast burned its crust black.

The Directed Change Linking Rule is meant to capture a parallel between verbs of change of state such as *break* and *open*, and verbs of inherently directed motion such as *fall* and *come*, characterizing both types of change as “directed.” As already mentioned, there is a distinction among verbs of motion between verbs like *roll*, *walk*, *swim*, and *bounce*, which specify a manner of motion but not a direction of motion, and verbs like *arrive*, *come*, *go*, *rise*, and *fall*, which specify a direction (be it deictic, as in the case of *come*, or not, as in the case of *rise*) but not a manner (Hoekstra 1984, B. Levin and Rappaport 1989, B. Levin and Rappaport Hovav, 1992, L. Levin 1986, C. Rosen 1984, Schlyter 1978, 1981). Consider, for example, the verb *come*: someone might come somewhere by running, walking, skipping, or jogging.⁷ The Directed Change Linking Rule is intended to apply to verbs of inherently directed motion, classifying them as unaccusative. It will not apply to the verbs of manner of motion because, although the action described by a verb of manner of motion inherently involves a kind of change, it is not directed. It turns out that nonagentive verbs of manner of motion such as *roll* and *bounce* are

indeed unaccusative, but we will argue in section 4.1.4 that their unaccusativity arises from a yet-to-be-introduced linking rule. In that section we also argue that agentive verbs of manner of motion such as *run* and *swim* are unergative, as expected given the Immediate Cause Linking Rule.

There is evidence that the verbs of inherently directed motion are unaccusative. For example, the Italian verbs in (29) take the unaccusative auxiliary *essere* 'be', and the Basque verbs in (30) take the unaccusative auxiliary *izan* 'be'.

(29) *andare* 'go', *venire* 'come', *entrare* 'enter', *partire* 'leave'

(30) *etorri* 'come', *joan* 'go'

In English these verbs are not acceptable with cognate objects, consistent with an unaccusative classification.

- (31) a. *She arrived a glamorous arrival.
b. *The apples fell a smooth fall.

We cannot use the resultative construction to test for the status of these verbs, because, as discussed in section 2.3.2 and Simpson 1983a, the resultative construction is incompatible with verbs of inherently directed motion. However, these verbs are also unable to occur in the *X's way* construction even though there are different restrictions on this construction than on the resultative construction, suggesting that the verbs are unaccusative.

- (32) a. *The oil rose its way to the top.
b. *The apples fell their way into the crates.
c. *She arrived her way to the front of the line.

The unacceptability of the *X's way* example in (32b) cannot be attributed to the nonagentive inanimate subject, since instances of this construction with such subjects are attested (see, for example, (9b), (9c), and (11)).

4.1.3 The Existence Linking Rule

In this section we turn to the linking of the theme argument of verbs of existence and appearance. In chapter 3 we argued that verbs of existence and appearance form a linguistically significant class of verbs with a characteristic pattern of behavior that sets them apart from monadic verbs of change of state, although the members of both classes have been classified as unaccusative verbs. We also suggested in section 3.3 that some of the distinctive properties of the verbs of existence and appearance might arise

because the notions of internal and external causation do not seem relevant to their semantic characterization. In this section we present evidence in support of their unaccusative classification. Having established this, we propose a linking rule to account for their classification and discuss its relationship with the Directed Change Linking Rule.

We begin by reviewing the evidence for considering verbs of appearance and existence to be unaccusative. Most obvious is the inclusion of the verbs in (33) among the Italian verbs that take the unaccusative auxiliary *essere* ‘be’, of the verbs in (34) among the Basque verbs that take the unaccusative auxiliary *izan* ‘be’, and of the verbs in (35) among the Dutch verbs that take the unaccusative auxiliary *zijn* ‘be’.

(33) apparire ‘appear’, rimanere ‘remain’, stare ‘stay/be’, ...

(34) agertu ‘appear’, egon ‘stay/be’, gertatu ‘happen’, sortu ‘arise’, ...

(35) blijven ‘remain, stay’, gebeuren ‘happen’, verschijnen ‘appear’,
ontstaan ‘come into existence’, ... (Hoekstra 1984: 178)

The strongest evidence that the verbs of appearance and existence in English are unaccusative comes from their behavior in the *there*-insertion construction. Although it is debatable whether all instances of this construction can be used to diagnose the unaccusative syntactic configuration, those instances of this construction that take the form “*there* V NP PP,” where the PP is selected, have been argued to diagnose unaccusativity (Burzio 1986). The reason for this claim is that if the NP appears to the left of (i.e., “inside”) a selected PP, then that NP is presumably in the S-Structure object position, and hence the verb must be unaccusative since movement to object position—something that would be required if the verb were unergative—is not permitted. Such instances of *there*-insertion are what Milsark (1974) calls “inside verbals”; he contrasts them with what he calls “outside verbals,” instances of *there*-insertion of the form “*there* V PP NP,” where the NP is to the right of (i.e., “outside”) the PP. As Burzio (1986) points out, outside verbals—also called “presentational” *there*-insertion by Aissen (1975)—need not be related to unaccusative verbs. In fact, the list of verbs found as outside verbals is much larger than the list of verbs found as inside verbals, resembling the list of verbs found in locative inversion (a construction that we discuss at length in chapter 6). What is important here is that verbs of existence and appearance are attested in instances of *there*-insertion that qualify as inside verbals, supporting an unaccusative classification of these verbs.

- (36) a. There arose dissension between them, concerning a head wound suffered by a cow ... [A. W. Upfield, *Man of Two Tribes*, 79]
 b. There remained three documents on his blotter when he pressed his desk bell. [A. W. Upfield, *The Bachelors of Broken Hill*, 11]

Also consistent with an unaccusative classification of these verbs is their inability to take any form of object. For instance, they are not found with cognate objects.

- (37) a. *Karen appeared a striking appearance at the department party.
 b. *Phyllis existed a peaceful existence.

The *X's way* construction is of mixed value as a diagnostic with these verbs. It is not relevant to verbs of existence since, like the resultative construction, it has a stativity restriction (see Jackendoff 1990), as shown by the unacceptability of the example in (38) involving a stative verb; therefore, as would be expected, an existence verb such as *remain* is not possible in this construction.

- (38) *Sylvia is knowing her way to first prize.

- (39) *Jill remained her way to a ticket to the show.

Nevertheless, the *X's way* construction is not acceptable with verbs of appearance, even though these verbs are nonstative. There may be independent grounds for excluding these verbs. As Jackendoff (1990) notes, this construction is generally incompatible with intransitive achievement verbs. The question is whether this restriction arises because achievement verbs are semantically incompatible with this construction, or whether it simply reflects the syntactic fact that intransitive achievement verbs are unaccusative. Jackendoff points out that in the *X's way* construction the process described by the verb can be a repeated bounded event, as in *She yawned her way into the study*; nonetheless, the verb in the construction cannot be a verb of appearance, even if such a verb is used to describe the iteration of a bounded event.

- (40) a. *Andrea appeared her way to fame.
 b. *The explosions occurred their way onto the front page.

Finally, further evidence for the unaccusativity of verbs of appearance comes from their ability to form adjectival perfect participles (Hoekstra 1984, B. Levin and Rappaport 1986).

- (41) a recently appeared book, a newly emerged scandal

Although such participles are formed only from telic intransitive verbs (B. Levin and Rappaport 1989), if B. Levin and Rappaport (1986) are correct, adjectival perfect participles are nevertheless an unaccusative diagnostic since the explanation for the derivation of such participles from unaccusative and passive verbs appeals to the syntactic properties of the verbs. Because of the telicity restriction, this test also is inapplicable to verbs of existence.

We have argued that verbs of spatial configuration on the simple position sense should also fall into the class of verbs of existence and appearance (that is, essentially when they take nonagentive arguments), and if so, we would expect them also to be unaccusative. In Italian it is difficult to establish the unaccusativity of these verbs because of the very different way in which the senses associated with verbs of spatial configuration in English are lexicalized. The Italian counterparts of most English verbs of spatial configuration have only an assume position monadic reading. The simple position interpretation that is available to these verbs in English can be expressed in Italian only through the use of the copula when the argument is inanimate and through either the use of the copula alone or the use of the copula plus a deverbal adjective formed from an assume position verb when the argument is animate.

(42) Giovanni/La sedia era sotto l'albero.
'Giovanni/the chair was under the tree.'

(43) Giovanni era seduto sotto l'albero.
'Giovanni was sitting under the tree.'

Mulder and Wehrmann (1989) look at evidence from Dutch regarding the classification of the simple position verbs and suggest that they are unaccusative; however, as a reviewer has pointed out to us, not only are the data that they examine quite subtle, but there are problems with their application of the diagnostics.

Returning to English, the strongest evidence for an unaccusative classification of the simple position verbs once again comes from their behavior in the *there*-insertion construction. These verbs appear in instances of this construction of the form "*there* V NP PP," that is, with the NP inside the PP.

(44) a. Meaning that it had not happened yet for there stood Buffy in the driveway staring after them her hand raised in a wan farewell. [J. C. Oates, *Black Water*, 142]

- b. Throughout the war years there stood six statues of the martyrs on the palace lawn.

Although (44a) describes the location of a person, it still seems to us that this example involves the simple position and not the maintain position use of the verb *stand*; in other words, the verb has a nonagentive interpretation. In fact, this must be so, since as Kirsner (1973:110) has pointed out, *there*-insertion sentences never receive an agentive interpretation. To illustrate this, he shows that *There remained three men in the room* does not permit the agentive interpretation available in *Three men remained in the room*—that is, the interpretation in which the men deliberately chose to stay in the room.

In addition, consistent with their unaccusative classification the simple position verbs do not take cognate objects.

- (45) a. *The statue stood a heroic stance in the middle of the common.
 b. *The city sprawled an extensive sprawl around the bay.

It is difficult to find other evidence bearing on the status of these verbs in English for the same reason that it is difficult to find other evidence that bears on the status of verbs of existence: most of the tests are inapplicable for one reason or another.

We propose that the unaccusative status of verbs of existence and appearance results from the following linking rule:

(46) *Existence Linking Rule*

The argument of a verb whose existence is asserted is its direct internal argument.

This rule will apply to the theme argument of both types of verbs. With verbs of appearance, the theme argument comes to exist, whereas with verbs of existence it already exists. This rule would also apply to certain dyadic and triadic verbs, specifically verbs of creation such as *make* and *build* and verbs of putting such as *put* and *place*, since the object of these verbs is in one instance an entity that comes to exist and in the other an entity whose existence at a new location is asserted. In fact, the relationship between these classes of transitive verbs and the verbs of existence and appearance is brought out by their behavior with respect to locative inversion. Verbs of creation and verbs of putting are two of the classes of transitive verbs that are particularly well represented in this construction in their passive form; verbs of existence and appearance are considered to be the canonical locative inversion verbs. See section 6.4.5 for more discussion.

Although we have focused on verbs of existence and appearance, verbs of disappearance also pattern with these verbs, as noted in section 3.3.1. We assume that the theme argument of these verbs would become their direct internal argument by the Existence Linking Rule. If so, a slight reformulation of the linking rule would be required, so that it would apply to arguments whose existence is “denied” as well as “asserted.”

(47) *Existence Linking Rule* (revised)

The argument of a verb whose existence is asserted or denied is its direct internal argument.

The evidence that verbs of disappearance should be classified as unaccusative comes from many of the same sources that were used to argue for the unaccusative classification of verbs of appearance. For instance, the Italian counterpart of *disappear*, the verb *sparire*, takes the unaccusative auxiliary *essere* ‘be’. In English these verbs are found as adjectival perfect participles, although some of these have been nominalized, as in (48).

- (48) a. vanished civilizations, an expired contract, the deceased, ...
 b. ... if you don’t blink you may be able to see ... lingering up there in the void ... just the faintest remnant of an evanesced cat ... smile. [R. Baker, “The ’92 Follies,” 59]

The *there*-insertion construction cannot be used to show the status of these verbs because of a constraint against verbs of disappearance (Kimball 1973, among others; see also chapter 6).

Depending on how the notion of directed change is defined, verbs of appearance may fall under the Directed Change Linking Rule as well as the Existence Linking Rule, since appearance could be regarded as a directed change. However, this possibility does not detract from our analysis. There is no reason why more than one linking rule may not apply to a single argument. In fact, this is precisely what happens in Dowty’s (1991) proto-role approach to linking, where several of the entailments associated with a particular proto-role may apply to a particular argument. The observation that verbs of appearance are particularly stable in their unaccusativity could even be taken as support for this possibility. That is, no matter which linking rule these verbs fall under, they are predicted to be unaccusative. This constant expression is to be contrasted, for example, with the expression of the experiencer arguments of psychological predicates, as discussed by Dowty. Since these arguments have a single Proto-Agent entailment (sentience) and a single Proto-Patient entailment (change of state), they qualify for expression as either subject or object.

The existence of verbs like *fear* and verbs like *frighten*, which differ in the expression of their experiencer arguments, shows that experiencers actually vary in the type of expression they manifest.

4.1.4 The Default Linking Rule

The three linking rules introduced so far do not account for the behavior of all single-argument verbs. They apply only to internally caused verbs, verbs of directed change, and verbs of existence and appearance. But there are monadic verbs that satisfy none of these properties. Here we assume that the default assignment for an otherwise unassigned argument is as a direct internal argument, as set out in the following linking rule:

(49) *Default Linking Rule*

An argument of a verb that does not fall under the scope of any of the other linking rules is its direct internal argument.

We address in section 4.2 the reasons for introducing a “default” linking rule in addition to the other two linking rules that involve the notion of direct internal argument. In that section we present several types of evidence that argue against dispensing with the other linking rules. In this section we simply introduce this additional linking rule, focusing, for illustrative purposes, on its role in the linking of the theme argument of certain verbs of motion.

The assumption behind the Default Linking Rule is that, unless otherwise specified, a verb will take an internal argument before taking an external argument. This, in turn, suggests that the hierarchical organization of argument structure reflects the order of semantic composition of a verb with its arguments. We cannot provide full support for this assumption in this book, but we sketch its underlying motivation. Belletti and B. Levin (1985) examined a wide range of intransitive verbs taking PP complements (e.g., *depend on*, *talk to*, *know of*) and found strong reasons to believe that such verbs also take a direct internal argument. This property was taken as evidence that a verb can take a PP only if it already has a direct argument. Belletti and B. Levin studied several subcases of this construction and identified several ways of meeting this requirement. In particular, some verbs taking PP complements meet this requirement by being unaccusative, and others meet it by taking some sort of direct internal argument—possibly, one that is not expressed. If this generalization is correct, then, when taken together with the fact that transitive and unaccusative verbs have direct internal arguments, it suggests that the default

is for a verb to have a direct argument. Belletti and B. Levin make the further proposal, which we do not adopt, that even typical unergative verbs take direct internal arguments. In fact, Hale and Keyser (1993) make a similar proposal as part of an attempt to characterize the range of possible English unergative verbs.

The Default Linking Rule will apply to a subclass of the verbs of manner of motion. As already mentioned in section 4.1.2, verbs such as *jog*, *run*, *stroll*, *swim*, and *walk*, which are typically used with animate agentive arguments, show unergative behavior since, as internally caused verbs, they fall under the scope of the Immediate Cause Linking Rule. We have previously referred to such verbs as agentive verbs of manner of motion since they are typically used with animate agentive arguments; however, they might be more accurately characterized as internally caused verbs of manner of motion since some permit inanimate arguments if these arguments have “self-controlled” bodies (*A battered boat was sailing on Lake Michigan*, *A lot of planes fly over Chicago*). We contrast this class with a second class of verbs of manner of motion that are usually nonagentive; this class includes *bounce*, *roll*, and *spin*. For purposes of simplicity, in this section we refer to the agentive and nonagentive verbs of manner of motion as the *run* and *roll* verbs, respectively. When the *roll* verbs are used nonagentively, they are externally caused. Their passive participant does not fall under the scope of the Directed Change Linking Rule, since the change it undergoes is not directed. Instead, it is linked by the Default Linking Rule. The result is that the *roll* verbs, when the external cause is left unexpressed, are unaccusative. There is in fact abundant evidence (some of which is presented in B. Levin and Rappaport Hovav 1992) that the class of verbs of manner of motion is not homogeneous and that the *run* verbs fall under the Immediate Cause Linking Rule, whereas the *roll* verbs fall under the Default Linking Rule. The members of the two classes of verbs show the expected differences in behavior with respect to unaccusative diagnostics.

Once again the resultative construction affords some of the clearest evidence that English treats verbs like *roll* and verbs like *run* differently. In this construction the *run* verbs are found in the unergative pattern and the *roll* verbs are found in the unaccusative pattern, as illustrated in (50)–(53). (Although see section 5.1.1 for a fuller picture of the *run* verbs in the resultative construction.)

- (50) a. The jogger ran his soles thin.
 b. Don't expect to swim yourself sober!

- (51) a. *The jogger ran sore.
b. *Don't expect to swim sober!

- (52) a. The door rolled open.
b. The shutter swung shut.

- (53) a. *The door rolled itself open.
b. *The shutter swung itself shut.

Furthermore, the *run* verbs, but not the *roll* verbs, are found in the *X's way* construction.

- (54) a. The jogger ran his way to better health.
b. Swim your way to a new you!

- (55) a. *The pebbles rolled their way into the stream.
b. *The ball bounced its way into the street.

The causative alternation can also be used to support the proposal that not all verbs of manner of motion are classified alike. Consistent with the proposed classifications, verbs from the *roll* class exhibit this alternation, which is associated with unaccusative verbs.

- (56) a. The ball rolled/bounced.
b. The child rolled/bounced the ball.

Hale and Keyser (1987) note that across languages verbs from the *run* class are not typically found in this alternation, as illustrated for English in (57) and (58), consistent with their proposed unergative classification.

- (57) a. The runners jogged all day.
b. *The coach jogged the runners all day.

- (58) a. The tourists wandered around the Roman ruins.
b. *The guide wandered the tourists around the Roman ruins.

As discussed in section 3.2.5, some members of the *run* class exhibit transitive causative uses in English in the presence of a directional phrase; but these uses were shown to differ in several respects from the transitive causative uses of prototypical causative alternation verbs such as *break* and thus do not weaken our claim that these verbs are unergative. We discuss these uses further in section 5.1.1.2.

Additional evidence from English regarding the classification of verbs of manner of motion comes from the prepositional passive construction, which (as discussed in section 4.1.1.2) is manifested by unergative verbs

that allow protagonist control. The *run* verbs behave like other unergative verbs in being found in this construction.

- (59) a. This track has been run on by our finest young athletes.
 b. This pool has been swum in by the last three world record holders.

This construction does not provide conclusive evidence concerning the status of the *roll* verbs, since verbs with nonagentive subjects are never candidates for this construction.

- (60) a. *This golf course has been rolled on by only the best golf balls.
 b. *This floor has been bounced on by every type of ball imaginable.

Italian also provides support for the different classification of the *roll* and *run* verbs. In Italian the members of the two classes can to some extent be distinguished from each other in terms of their morphological shape. When used intransitively, members of the *roll* class often take the reflexive clitic *si*, and some verbs in this class must take this clitic. When they take this clitic, like all monadic *si* verbs in Italian (Burzio 1986, C. Rosen 1981, among others), they display unaccusative behavior; for instance, they take the auxiliary *essere* 'be'.

- (61) I bambini *si* sono rotolati sul prato.
 the children REFL is rolled on the meadow
 'The children rolled on the meadow.'

However, it is striking that in Italian none of the verbs in the *run* class ever takes the clitic *si* while maintaining basically the same sense.

- (62) a. *Giovanni *si* è corso.
 Giovanni REFL is run
 b. *Maria *si* è nuotata.
 Maria REFL is swum

This property is consistent with an unergative classification of the *run* verbs. Finally, the *roll* verbs can select the unaccusative auxiliary *essere* 'be' even when they are found without the clitic *si* or without a directional phrase; the *run* verbs cannot select the auxiliary *essere* in these circumstances.

- (63) a. La palla è rotolata sul prato.
 the ball is rolled on the meadow
 'The ball rolled on the meadow.'

- b. *Gianni è corso.
Gianni is run

To summarize the discussion of verbs of manner of motion, the members of the two subclasses of this larger class receive a different classification in accordance with their meanings and the linking rules. Both classes of verbs will be discussed further in chapter 5.

We conclude our discussion of the Default Linking Rule by pointing out that it is also likely that once the range of data studied is broadened to include transitive verbs, the Default Linking Rule will apply to a variety of arguments that do not clearly fall under any other linking rule, and, consequently, they will be direct internal arguments. It is well known that although verbs in which an agent acts on and affects a patient are transitive, there are also many transitive verbs that do not fit this mold, typically because their nonagent argument is not a patient. The Default Linking Rule would also apply to such nonpatient arguments, resulting in their expression as objects.

4.2 Ordering the Linking Rules

Now that we have introduced a set of linking rules, another question needs to be addressed: are all the linking rules relevant to direct internal argument—the Directed Change Linking Rule, the Existence Linking Rule, and the Default Linking Rule—necessary? In particular, given that one of the linking rules for direct internal argument has been formulated as a default rule, could it subsume the other rules that apply to direct arguments, the Directed Change and Existence Linking Rules? For example, one might suggest that the Default Linking Rule be applied to verbs like *fall* and *break*, obviating the need for the Directed Change Linking Rule. One way of demonstrating that the Directed Change Linking Rule is needed is by examining the behavior of verbs that fall under both the Immediate Cause Linking Rule and the Directed Change Linking Rule. We will show that such verbs consistently exhibit unaccusative behavior in English, Italian, and Dutch. This suggests that, at least in these languages, the Directed Change Linking Rule takes precedence over the Immediate Cause Linking Rule. If the Default Linking Rule were responsible for the expression of arguments denoting entities undergoing a directed change, it could never, by virtue of being a default rule, take precedence over the Immediate Cause Linking Rule. The relevant evidence comes from verbs of motion, assume position verbs, and internally caused

verbs of change of state such as the Italian counterpart of *blush* and the Dutch counterpart of *bloom*. We will show that a similar argument can be constructed in favor of retaining the Existence Linking Rule.

4.2.1 Internally Caused Verbs of Change of State

We mentioned in chapter 3 that the notions of change of state and external causation do not always coincide. Although the majority of verbs of change of state are externally caused, there are some internally caused verbs of change of state. Such verbs are the perfect testing ground for the interaction between the Immediate Cause Linking Rule and the Directed Change Linking Rule since a priori they fall under the scope of both rules. If, as we propose, the Directed Change Linking Rule takes precedence over the Immediate Cause Linking Rule, then a verb denoting an internally caused change of state is predicted to be unaccusative. In this section we show that this prediction is borne out. In particular, we examine the Italian counterpart of English *blush*, *arrossire*, and the Dutch counterpart of English *bloom*, *bloeien*. This investigation will also once again demonstrate that verbs that are considered translation equivalents in two languages can differ in subtle ways, and yet conform to the lexical semantic categories that we have set out.

As we pointed out in section 1.2.1, the eventuality described by the English verb *blush* can be conceptualized as either a state or a change of state, and languages appear to make different choices about which conceptualization they choose. Dutch and Italian appear to have made different choices, according to the discussion in McClure 1990. McClure points out that the Italian verb *arrossire* ‘blush’ actually describes a change of state, a property that probably reflects its morphological shape: the verb literally means ‘become red’ (*rosso* is Italian for *red*). To support this proposal, McClure demonstrates that *arrossire* behaves like a telic verb with respect to time adverbials.

- (64) a. *G è arrossito per 10 minuti.
 G is blushed for 10 minutes
 b. G è arrossito in un secondo.
 G is blushed in one second
 (McClure 1990:314, table 4)

But blushing is conceptualized as an internally caused eventuality, as shown by the fact that in Italian (and in English too, for that matter) this verb does not have a lexical causative; therefore, the Italian verb *arrossire* is an internally caused verb of change of state.

- (65) *Il complimento/Mio padre mi ha arrossito.
 the compliment/my father me has blushed

If the Directed Change Linking Rule has precedence over the Immediate Cause Linking Rule, then the Italian verb *arrossire* should be unaccusative. In fact, this verb does select only the unaccusative auxiliary *essere* 'be' and never selects the auxiliary *avere* 'have'.

McClure (1990) contrasts the Italian verb *arrossire* with its Dutch counterpart, *bloezen*, which he shows is compatible with durative phrases only, suggesting that it lacks the change-of-state interpretation.

- (66) a. J heeft een uur lang gebloosd.
 J has one hour long blushed
 b. *J heeft in een uur gebloosd.
 J has in one hour blushed
 (McClure 1990:314, table 4)

The Dutch verb *bloezen*, then, cannot fall under the scope of the Directed Change Linking Rule, and, as an internally caused verb that is not a verb of change of state, it should display unergative—and not unaccusative—behavior, as it does. As (66a) shows, the Dutch verb takes the auxiliary *hebben* 'have'. If the following examples of the *X's way* and cognate object constructions are indicative, then English, like Dutch, treats the verb *blush* as a 'be in state' verb with an unergative classification.

- (67) My 92-year-old mother would blush her way through this particular collection of stories, jokes and rhymes. [V. G. Paley, "The Schoolyard Jungle," 43]
- (68) a. Frederick, roused from his preoccupation, sprang to his feet, blushing the blush of shame. [P. G. Wodehouse, "Portrait of a Disciplinarian," 116]
 b. Catharine blushed a blush of anger. [1828 Scott, F. M. Perth III, 53; cited in Visser 1963:417]

Thus, the verb *blush* describes an internally caused eventuality; however, in some languages this eventuality is also considered to be a directed change, so that the corresponding verb shows unaccusative behavior, demonstrating that the Directed Change Linking Rule takes priority over the Immediate Cause Linking Rule.

The near-synonymous English verbs *bloom*, *blossom*, and *flower* and their counterparts in other languages are also internally caused verbs that are sometimes open to a change-of-state interpretation. In particular,

bloom is ambiguous between a change-of-state reading (roughly ‘come to be in bloom’) and a reading in which the verb describes being in a state, specifically the state described by the phrase *in bloom*. In English the two readings can be distinguished through the use of the appropriate time adverbials. On its most salient reading, (69) means that the cactus was in the state described by the phrase *in bloom* for three days. However, this sentence may have an iterative change-of-state reading, where it means that the cactus kept producing new blossoms for three days.

(69) The cactus bloomed/blossomed for three days.

On the other hand, (70) can only have the change-of-state reading. In this example the state is reached at the end of three days.

(70) The cactus bloomed/blossomed in three days.

Although it is difficult to find diagnostics that will reveal the syntactic categorization of the different senses of *bloom* in English, evidence is available in Dutch.⁸ The Dutch counterpart of *bloom*, *bloeien*, is an internally caused atelic verb, as shown by its compatibility with durative adverbs (see (71)). As expected, it takes the auxiliary *hebben*, compatible with the fact that internally caused verbs are not expected to be unaccusative if they are not verbs of directed change.

(71) Deze bloem heeft het hele jaar gebloeid.
 this flower has the whole year bloomed
 ‘This flower bloomed for the whole year.’

However, there is a related particle verb *op-bloeien* (literally ‘up-bloom’), which takes the auxiliary *zijn* ‘be’ and is used in a slightly different range of contexts than the verb *bloeien*.

- (72) a. Hij bloeide helemaal op toen ik hem zei dat
 he bloomed completely up when I him told that
 hij een goed artikel had geschreven.
 he a good article had written
 ‘He cheered up/flourished completely when I told him that he had written a good article.’
- b. Hij is helemaal op-gebloeid nadat hij van baan is veranderd.
 he is completely up-bloomed after he from job is changed
 ‘He completely cheered up/flourished after he changed his job.’

As these examples show, the verb *bloeien* cannot be applied to people directly, though the particle verb *op-bloeien* can. The verb *op-bloeien* not

only takes the auxiliary *zijn* 'be', suggesting an unaccusative classification, but also has a change-of-state interpretation. The unaccusative classification is just what we would expect if it is an internally caused verb of change of state, and the Directed Change Linking Rule takes precedence over the Immediate Cause Linking Rule. The verb *op-bloeien* can also be applied to plants and flowers in a somewhat metaphorical sense (it does not mean that the plant has flowers) or to describe a transition to a booming economy, as in (73) and (74); again all of these interpretations involve a directed change.

(73) Het boompje is helemaal op-gebloeid toen ik het
 the little tree is completely up-bloomed when I it
 regelmatig mest gaf.
 regularly fertilizer gave
 'The little tree completely flourished when I regularly gave it
 fertilizer.'

(74) De economie bloeide op.
 the economy bloomed up
 'The economy prospered.'

The unaccusative classification of the verb *op-bloeien* receives further confirmation. In Dutch, as in English, some unaccusative verbs can have related adjectival perfect participles although unergative verbs never can (Hoekstra 1984), and the verb *op-bloeien*, unlike *bloeien*, can be found as an adjectival perfect participle.

(75) *een gebloeid boompje
 a bloomed tree

(76) En toen werd ik geconfronteerd met een volledig
 and then was I confronted with a completely
 op-gebloeide AIO.
 up-bloomed graduate student
 (AIO = Assistent In Opleiding 'assistant in training', i.e., graduate
 student)

4.2.2 Verbs of Inherently Directed Motion

A striking property of the verbs of inherently directed motion is that although they can be used either agentively or nonagentively, they consistently show unaccusative behavior. Of course, this property can be explained if, as we postulated above, the Directed Change Linking Rule takes precedence over the Immediate Cause Linking Rule, so that the

latter rule will not apply to any verb to which the former applies. This property is most easily illustrated with data from Italian. The Italian verb *cadere* 'fall', although usually said to describe an action that is not under the control of the entity that moves, selects the unaccusative auxiliary *essere* 'be' even when used agentively.

- (77) Luigi è caduto apposta.
 Luigi is fallen on purpose
 'Luigi fell on purpose.'
 (C. Rosen 1984:64, (76a))

Similarly, the Italian verb *salire* 'go up, climb' always takes the unaccusative auxiliary *essere* 'be', even though there is no reason not to think that it could be used agentively with an animate subject.⁹

- (78) Sono (*ho) salito sulla montagna.
 am have climbed on the mountain
 'I climbed/went up the mountain.'

We will show that the behavior of the verbs of inherently directed motion is in striking contrast to that of the *roll* verbs, just discussed in section 4.1.4. In section 5.3 we will show that when used agentively, the *roll* verbs are unergative, rather than unaccusative. Further extensive evidence from the behavior of verbs of motion for the ranking of the linking rules will be given in section 5.1.1.

4.2.3 Assume Position Verbs

As we noted in section 4.1.1.2, verbs of spatial configuration when predicated of agents can have one of two meanings: 'maintain a specific position' or 'assume a specific position'. We showed, further, that the linking rule that is relevant for the maintain position sense is the Immediate Cause Linking Rule. The assume position sense, on the other hand, involves an action that is both internally caused and a directed change. Given the evidence we presented in section 4.2.2 that the Directed Change Linking Rule takes precedence over the Immediate Cause Linking Rule, we would predict that verbs of spatial configuration in the assume position sense ought to be unaccusative.

The prepositional passive construction discussed in section 4.1.1.2 can be used to establish that in English these verbs are unergative in the maintain position sense and unaccusative in the assume position sense. We showed in that section that verbs like *sit* and *stand* can appear in the prepositional passive construction, as in (22), repeated here.

- (79) a. This platform has been stood on by an ex-president.
 b. These chairs have been sat on by the Queen's children.

Although the active counterparts of these sentences, which are given in (80), are ambiguous between a maintain position and an assume position reading, it is striking that these verbs consistently resist the assume position interpretation when they are found in the prepositional passive construction.

- (80) a. An ex-president stood on this platform.
 b. The Queen's children sat on those chairs.

The absence of this reading can be brought out: if a particle is added to the sentences in (80), then they become disambiguated, receiving only the assume position reading, as shown in (81). However, prepositional passives of these verbs are excluded in the presence of the particle, as in (82), showing definitively that no passive counterpart is available for the assume position reading.¹⁰

- (81) a. An ex-president stood up on this platform.
 b. The Queen's children sat down on those chairs.
- (82) a. *This platform has been stood up on by an ex-president.
 b. *These chairs have been sat down on by the Queen's children.

The lack of ambiguity exhibited in (79) is expected if these verbs are unaccusative on the assume position reading, since this reading would not be compatible with the prepositional passive.

Further evidence for the unaccusative classification of assume position verbs comes from Italian. In Italian, assume position verbs are morphologically complex: they obligatorily appear with the reflexive clitic *si*, which is taken to be an indicator of unaccusative status when found with monadic verbs. Like all monadic verbs with the reflexive clitic, these verbs select the auxiliary *essere* 'be', which we take to be a sufficient condition for unaccusativity.

- (83) Maria *si* è seduta subito.
 Maria REFL is sat right away
 'Maria sat down right away.'

4.2.4 Verbs of Existence

A further open question involving the precedence relations among the linking rules concerns the order of the Existence Linking Rule with respect to the other linking rules. There are two issues that need to be

resolved: how is this rule ordered with respect to the Directed Change Linking Rule and the Immediate Cause Linking Rule, and is this ordering consistent with our claim that the Default Linking Rule is indeed a default rule?

We can provide a partial answer to these questions by adapting the argument from the previous section. Specifically, if agentivity can be shown to be irrelevant to the linking of the argument of a verb of existence, then we can conclude that the Existence Linking Rule has precedence over the Immediate Cause Linking Rule and that there is no reason to view the Default Linking Rule as anything more than its name suggests. In fact, when predicated of animates, verbs of existence can be used either agentively or nonagentively, but, like verbs of inherently directed motion, they consistently show unaccusative behavior. Again we illustrate this with an Italian example, which shows that the auxiliary *essere* 'be' is selected by the verb of existence *rimanere* 'remain' independent of agentivity.

- (84) Gianni è rimasto apposta.
 Gianni is remained on purpose
 'Gianni remained on purpose.'

This property is important for another reason. We suggested in section 3.3 that the distinctive properties of the verbs of existence and appearance might be attributable in part to the irrelevance of the notions of internal and external causation to the semantic characterization of these verbs. If the Immediate Cause Linking Rule had turned out to have precedence over the Existence Linking Rule (that is, if it had determined the classification of these verbs), this would have been at odds with this hypothesis concerning their semantic characterization.

We conclude that both the Directed Change and the Existence Linking Rules take precedence over the Immediate Cause Linking Rule, which in turn takes precedence over the Default Linking Rule. Next we must ask whether the Directed Change and Existence Linking Rules can be ordered with respect to each other. This is only an issue if their domains overlap, raising the more fundamental question of whether both rules are needed, a question we addressed in section 4.1.3. At this point we have not found any positive evidence that bears on this question, so we leave it for further study.

In his discussion of the semantic determinants of unaccusativity, Dowty (1991) briefly speculates that languages may weight telicity and agentivity

differently in calculating the classification of individual verbs and that Italian may be a language that gives more weight to telicity than to agentivity. The results of this section may then be considered to provide empirical support for Dowty's speculation. However, it may be the case that there is parametric variation in this regard. That is, although we suspect that all languages make use of the same syntactically relevant components of meaning, it is possible that they vary in terms of which component takes precedence over another. Labelle (1990, 1992) offers very suggestive data from French that may indicate that here at least the Immediate Cause Linking Rule takes precedence over the Directed Change Linking Rule. She shows that there is a subtle difference in meaning between those intransitive verbs of change of state such as *se briser* 'break' that appear with the reflexive clitic *se* and select *être* 'be' as their auxiliary, suggesting that they are unaccusative, and those intransitive verbs of change of state such as *casser* 'break' that do not necessarily appear with the clitic *se* and select *avoir* 'have' as their auxiliary in these circumstances, suggesting that they are unergative. Specifically, Labelle distinguishes between "internally driven transformations of an entity" that unfold naturally "without control from external factors" (1992:393) and those changes that do not come about in such a way. This distinction is clearly reminiscent of the distinction between internally caused and externally caused changes of state used in this book. We leave it for future research to determine what parametric variation exists between languages in this area.

4.3 Comparison with Other Approaches

4.3.1 Aspectual Approaches

In this section we compare our analysis with previous attempts to predict on the basis of lexical semantic properties the class membership of intransitive verbs in particular and the syntactic expression of arguments in general. Agentivity was one of the first semantic notions implicated in the determination of verb status, as seen in Perlmutter's paper introducing the Unaccusative Hypothesis, where the major category of unergative verbs is characterized as "predicates describing willed or volitional acts" (1978:162). In recent years a number of researchers have claimed that lexical aspectual (Aktionsart) notions are most relevant for these purposes (Hoekstra 1984, B. Levin and Rappaport Hovav 1992, Martin 1991, Tenny 1987, Van Valin 1990, Zaenen 1993, among others).¹¹ The three

aspectual notions that have been most widely employed in studies of unaccusativity are agentivity, telicity, and stativity. We will compare our approach with approaches that have made use of these aspectual notions. Since Van Valin (1990) has provided the most explicit and thorough attempt to predict the class membership of verbs on the basis of lexical aspect, we focus on his analysis for the purposes of this comparison.

As we reviewed in chapter 2, Van Valin uses predicate decompositions based on the work of Dowty (1979) to represent verb meaning. The decompositions are assigned on the basis of the Vendler class to which a verb belongs. The decompositions Van Valin (1990:224) proposes for verbs in each of the Vendler classes are given in (85).

- (85) a. STATE: **predicate'** (x) or (x, y)
 b. ACHIEVEMENT: BECOME **predicate'** (x) or (x, y)
 c. ACTIVITY (+/– Agentive): (DO (x)) [**predicate'** (x) or (x, y)]
 d. ACCOMPLISHMENT: ϕ CAUSE ψ , where ϕ is normally an activity predicate and ψ an achievement predicate

Van Valin claims that unaccusative diagnostics are sensitive to those distinctions that reflect natural classes of verbs with respect to these decompositions. For example, he suggests that in Italian monadic activity verbs are unergative, whereas state, achievement, and accomplishment verbs are unaccusative. The relevant generalization is that the three types of verbs said to be unaccusative have lexical representations that include a state predicate, whereas the fourth type of verb, which is unergative, does not. Another distinction that can be captured naturally using these lexical representations is the telic/atelic distinction: only telic verbs have BECOME **predicate'** (x) or (x, y) in their lexical representations. In fact, Van Valin claims that the notion of telicity figures in the characterization of certain Dutch unaccusative phenomena, for example, auxiliary selection. In other languages, such as Acehnese and Tsova-Tush, the notion relevant to the classification of verbs is agentivity, rather than notions involving lexical aspect such as stativity and telicity. There may also be languages in which some constructions are sensitive to agentivity and others to telicity; Van Valin suggests that Dutch may be such a language. Dowty (1991) also stresses the centrality of the notions of telicity and agentivity in determining the class membership of intransitive verbs.

Our criticism of the aspectual approach will be threefold. We first discuss the advantage of taking agentivity to be subsumed under the notion of internal causation, as it is on our analysis (section 4.1.1). We illustrate

the advantage of this approach in section 4.3.1.1 by examining the classification of verbs that are neither agentive nor telic. The behavior of these verbs, and in particular the fact that their behavior is not uniform, will indicate that telicity and agentivity are not sufficient for determining the class membership of all intransitive verbs. Next, in section 4.3.1.2, we show that the notion of stativity is not relevant for predicting class membership. Indeed, in our analysis, stativity does not play a role at all. Finally, in section 4.3.1.3, we show how our concept of “directed change,” although similar to the concept of telicity, is preferred to the traditional aspectual notion of telicity.¹² In section 4.3.2 we compare aspects of our analysis with certain concepts that Dowty (1991) employs in his theory of argument selection.

4.3.1.1 Agentivity or Internal Causation? As mentioned above, both Dowty and Van Valin stress the importance of telicity and agentivity in determining class membership. Van Valin (1990) does not speculate on the status of verbs that are neither telic nor agentive, but from his analysis one would expect stativity to determine the status of such verbs, statives being unaccusative and nonstatives, perhaps, being unergative. Dowty (1991:608) speculates that the status of such verbs will depend on whether a particular language takes agentivity or the lack of it to be primary in verb classification, or whether it takes telicity or the lack of it to be primary. If the former, then nonagentive atelic verbs are expected to be unaccusative. If the latter, then such verbs are expected to be unergative. In any event, one would expect verbs that are neither telic nor agentive to display uniform behavior in any given language. Strikingly, however, this is not the case. We have shown that in English verbs of emission, which are atelic and nonagentive, show unergative behavior, whereas verbs from the *roll* class, which are also atelic and nonagentive, show unaccusative behavior. It is important to stress that this variation holds within a single language, so that it cannot be attributed to parametric variation between languages. Furthermore, the difference shows up in a single construction, namely, the resultative.

(86) He had set an alarm, which rang at five thirty the following morning, shrilling them both awake. [R. Pilcher, *Voices in Summer*, 116]

(87) *During the spring thaw, the boulders rolled the hillside bare.

The differing behavior of the *roll* verbs and the verbs of emission does find

an explanation in our analysis, which appeals to the distinction between internally and externally caused verbs. Since verbs of emission are internally caused, the Immediate Cause Linking Rule will apply to their emitter argument. But since the *roll* verbs, when nonagentive, are externally caused, the Immediate Cause Linking Rule is not applicable to them, although the Default Linking Rule is. Since the single arguments of these two types of verbs fall under these different rules, they end up with different classifications.

4.3.1.2 Problems with Stativity Besides the notions of agentivity and telicity, Van Valin (1990) suggests that the notion “state” is relevant to verb classification. This proposal is based on Van Valin’s observation that in Italian certain diagnostics of unaccusativity are sensitive to the distinction between activity verbs on the one hand and accomplishment, achievement, and stative verbs on the other. Given the lexical representations associated with these four types of verbs, Van Valin points out that the three classes that pattern together all have a state predicate in their lexical semantic representation (see (85)). In this section we show that contrary to Van Valin’s proposal, the notion “state” is irrelevant to verb classification.

We turn first to the verbs of emission, which, as we have shown in section 4.1.1, are unergative. Most verbs of emission do not describe temporally bounded eventualities, so in principle these verbs could be classified as either stative or activity verbs. And in fact it seems to us that verbs of emission fall along a continuum of stativity, verbs of smell emission being the most stative, verbs of light emission being slightly less stative, and verbs of sound emission and substance emission being the most process-like. We focus on the two subclasses that we take to have the most stative members (and particularly on the most stative verbs within these subclasses) since these are the ones that will be the most relevant for assessing Van Valin’s hypothesis: the verbs of smell emission and light emission.

Two definitional criteria have been used to isolate stative from nonstative verbs. (As Dowty (1979) has made clear, and as Lakoff (1966) himself acknowledges when he introduces his widely cited stativity tests, agentivity is *not* a criterion that distinguishes stative from nonstative verbs.) The first criterion, which is the more widely employed, is based on the notion of change. Stative verbs do not involve a change, whereas nonstative verbs do. This notion is essentially the one that Dowty (1979)

resorts to in his revised verb classification. Dowty's original criterion for the distinction—that stative verbs, but not nonstatives, can be judged true at a single moment—proved not to be viable because of the existence of interval statives (our simple position verbs). This criterion is also used by Carter (1978) and Kearns (1991). Kearns writes, “The general observation is that states have no essential changes or transitions, from which it follows that they are continuous and are not essentially bounded” (1991:116). From the perspective of this criterion, certain verbs of emission such as *stink* (cited in Dowty 1979 as being a stative verb), *smell*, *gleam*, *glisten*, *glow*, and *shine* ought to be classified as stative since it is not apparent what kind of change they entail.¹³ Comrie (1976a:48) presents a slightly different criterion. He suggests that nonstates, but not states, require an input of energy for the maintenance of the eventuality. This criterion would seem to class all verbs of light emission and smell emission as states.

Turning next to diagnostic tests for stativity, most purported stativity tests turn out to distinguish either agentive from nonagentive predicates or individual-level from stage-level predicates (see Carlson 1977, Dowty 1979, Lakoff 1966, among others, for some discussion). For example, it appears that the ability to be used in the present progressive is not a test for nonstativeness, but rather is a test for a nonmomentary predicate. Since the stage-level interval statives (i.e., the simple position verbs) are nonmomentary predicates, they can appear in the progressive. Most individual-level predicates are stative and most stage-level predicates are nonstative, but the examples in (88), cited by Dowty (1979), show that there are stage-level stative predicates.

- (88) a. New Orleans lies at the mouth of the Mississippi River.
 ??New Orleans is lying at the mouth of the Mississippi River.
 (Dowty 1979:174, (67a,a'))
- b. My socks are lying under the bed. (Dowty 1979:173, (62a))
 ??My socks lie under the bed.

On the other hand, several of the tests that Lakoff (1966) cites for isolating stative verbs turn out to isolate agentive from nonagentive verbs. These tests are (i) only nonstatives can occur as imperatives, (ii) only nonstatives cooccur with adverbs like *deliberately* and *carefully*, and (iii) only nonstatives occur as complements of *force* and *persuade*. The drawbacks of these tests can be seen when they are applied to verbs with inanimate subjects, such as intransitive *roll*, which clearly does not de-

scribe a state. Yet as the examples in (89) show, this verb fails the tests; the sentences are only acceptable if the rock is anthropomorphized.

- (89) a. *I persuaded the rock to roll down the hill.
 b. *The rock rolled down the hill carefully/deliberately.
 c. *Roll down the hill, rock!

The one stativity test cited by Dowty (1979) that does appear to correlate with the change/no change distinction is the ability of a verb to appear in *do* constructions. This property does not seem to be a reflection of agentivity, as shown by the examples in (90) with the verb *roll*.

- (90) a. The marble rolled off the table and the ball did so too.
 b. What the rock did was roll down the hill.

One other test that seems to make the relevant distinction is Jackendoff's (1983) test for distinguishing states from what he terms "events" (i.e., nonstates): only nonstates appear in the frame *What happened/occurred/took place was . . .*. Certain verbs of emission only marginally appear in the contexts described by Dowty and Jackendoff.

- (91) a. ??What the spotlight did was shine on the parking lot.
 b. ??What Mary's face did was glow with excitement.
 c. ??What the garbage did was stink.
- (92) a. ??What happened was the spotlight shone on the parking lot.
 b. ??What happened was Mary's face glowed with excitement.
 c. ??What happened was the garbage stank.

The sentences in (92) are really only acceptable on a reading where the onset of an event is described: the spotlight *began* to shine, Mary's face *began* to glow, and so on. Pulling together the results of this discussion, it appears that both from the perspective of definitional criteria and from the perspective of diagnostic tests, some verbs of emission are stative and some are not. Yet all of these verbs show uniform behavior with respect to the Unaccusative Hypothesis, suggesting that stativity is not relevant to their classification.

If the notion of state were a semantic determinant of unaccusativity, certain classes of verbs—unaccusative activity verbs and unergative stative verbs—would not be expected to exist. The stative verbs of emission illustrate the existence of unergative stative verbs, as do the maintain position verbs. Verbs of spatial configuration in the maintain position sense, though predicated of animates, are still stative—in fact, Dowty's

name for this class is “interval statives”—but they are not unaccusative.¹⁴ The nonagentive verbs of manner of motion such as *roll* illustrate the existence of unaccusative activity verbs. Such verbs behave like unaccusatives with respect to the diagnostics even though because of their aspectual classification as activity verbs they do not have a state predicate in the lexical representation that would be assigned to them under a Van Valin–style analysis.

4.3.1.3 Problems with Telicity Telicity has also been cited as a determinant of unaccusativity (Dowty 1991, Hoekstra 1984, Van Valin 1990, Zaenen 1993, among others). Telic intransitive verbs are typically unaccusative, as we have shown with verbs of change of state and verbs of inherently directed motion. However, our linking rule makes reference to the notion of directed change rather than telicity. This formulation was chosen because there are two classes of atelic verbs that behave like unaccusatives and seem to fall under the same linking rule as the telic verbs.

One class consists of the verbs that Dowty (1979) calls “degree achievement verbs” (see also Abusch 1985, 1986). This set includes the verbs *widen*, *harden*, *dim*, and *cool*. The degree achievement verbs are a subclass of the verbs of change of state, but are set apart from other verbs of change of state because they do not necessarily entail the achievement of an end state, although they entail a change in a particular direction. Thus, when a road widens, it becomes wider, but it need not necessarily become wide. To bring out the resemblance between these verbs and the second class of atelic verbs we will be examining in this section, we will refer to the degree achievements as *atelic verbs of change of state*. The second class of atelic verbs we consider consists of those verbs of inherently directed motion that we take to be the motional counterparts of the atelic verbs of change of state; we will refer to these as *atelic verbs of inherently directed motion*. This class includes verbs like *descend*, *rise*, and *fall*, which describe motion in a particular direction without necessarily entailing the attainment of a particular endpoint; thus, these verbs are not necessarily telic. The verbs in both classes display unaccusative behavior, even though they are not necessarily interpreted as telic (although they may be), as shown by their compatibility with durative *for* phrases, as well as punctual *at* phrases.

- (93) a. The soup cooled for half an hour.
 b. The soup cooled at three o'clock.

- (94) a. The plane descended for fifteen minutes.
 b. The plane descended at three o'clock.
- (95) a. The temperature rose steadily for three hours.
 b. The temperature rose at one o'clock.

There are several types of evidence that atelic verbs of inherently directed motion like *rise* are unaccusative. The Italian counterparts of these verbs take the unaccusative auxiliary *essere* 'be'.

- (96) *è caduto* 'has fallen', *è disceso* 'has descended'

The resultative construction cannot be used to test for the status of these verbs, because, as already mentioned, the resultative construction is incompatible with verbs of inherently directed motion. However, these verbs are also unable to occur in the *X's way* construction even though there are fewer restrictions on this construction than on the resultative construction, suggesting that they are unaccusative.

- (97) a. *She rose her way to the presidency.
 b. *The oil rose its way to the surface.

Furthermore, they are not found with cognate objects.

- (98) a. *The bird soared a graceful soar.
 b. *She rose a wobbly rise.

It is more difficult to find evidence bearing on the status of the atelic verbs of change of state. However, most of these verbs occur in the causative alternation. In line with the reasoning used in section 4.1.1.3 to explain why internally caused verbs such as *laugh* do not have causative uses, we can take the fact that these verbs *do* have causative uses as an indication that they are unaccusative.

- (99) The soup cooled./I cooled the soup.
 (100) The lights dimmed./I dimmed the lights.

The atelic verbs of change of state are also not found in the *X's way* construction, a property that is also consistent with an unaccusative analysis.

- (101) a. *The soup cooled its way to room temperature.
 b. *The days lengthened their way to summer.

4.3.2 Comparison with Dowty's (1991) Approach

The theory of argument selection developed by Dowty (1991) may appear to differ in important ways from the theory being developed here. It

appears to us, however, that there is not much conflict between our general approach to linking and Dowty's approach. The fundamental innovative moves in Dowty's theory are two. First, there are only two thematic roles, agent and patient, relevant to argument expression (at least, for the expression of those arguments that are realized as subject or direct object). Second, these roles are not discrete but rather are considered to be cluster concepts. The thematic role borne by an argument is determined by the lexical entailments imposed on it by the verb, but none of these entailments is either necessary or sufficient for associating either the agent or the patient role to an argument. Dowty therefore refers to these roles as "Proto-Agent" and "Proto-Patient." For dyadic verbs the argument with the most Proto-Agent entailments is expressed as subject, and the argument with the most Proto-Patient entailments is expressed as direct object.

The linking rules we have presented can be seen as Proto-Agent and Proto-Patient entailments. It is likely that when the scope of our study is widened to deal with transitive verbs from a variety of classes, a more sophisticated method of calculating argument expression will be needed. Dowty suggests a simple method of calculation: "counting up" the Proto-Agent and Proto-Patient entailments of each argument. We have, however, found evidence that there is a precedence relation between certain linking rules, but there is in fact nothing in Dowty's theory of argument linking that would necessarily preclude giving certain entailments more weight than others in determining argument expression. Since the scope of Dowty's study is much broader than ours, his theory can be seen as an elaboration of ours, and ours can be seen to be a refinement of his in some ways. In this section we concentrate on the differences in the concepts we employ in our linking rules and those Dowty employs in his Proto-Patient entailments. The differences we find between the approaches, then, lie in the particular formulation of the linking rules or the entailments, rather than in the general conception of these rules. (As we discuss in section 5.2, however, we differ with Dowty in the treatment of variable behavior verbs.)

The concept in Dowty's work that should most obviously figure in such a comparison is *incremental theme*; it is a member of the set of Proto-Patient entailments. An incremental theme is an argument that stands in a homomorphic relation with the predicate of which it is an argument, in such a way that the part-whole relations of the theme with respect to some property can be mapped onto the part-whole relations of the event as a whole. To illustrate, Dowty uses the verb *mow*, whose direct object is an

incremental theme. In *mow the lawn*, the “mowedness” of parts of the lawn can be mapped onto the parts of the event. When half of the lawn has been mowed, the event is halfway complete; when the entire lawn has been mowed, the entire event is complete.

It turns out that most arguments characterizable as incremental themes fall under our concept of directed change since they are entities that undergo a directed change. And yet, it is clear that the two concepts—incremental theme and argument undergoing a directed change—are not equivalent. Some arguments that undergo a directed change do not fall under Dowty’s concept of incremental theme. These are the arguments of atelic verbs of inherently directed motion such as *rise* and atelic verbs of change of state such as *dim*. As Dowty himself points out, since these verbs involve what he calls an indefinite change of position or state, there is no clear endpoint to the event, and the argument that changes cannot stand in the relation to the event as a whole that is required for it to qualify as an incremental theme. The theme argument of a telic verb of directed motion such as *come* or directed motion *run*—the argument that undergoes a change of location—is also treated differently by the two accounts. Dowty argues that the path argument—and not the theme argument—of these verbs is the incremental theme. The reason for this is that if, for example, Jill goes halfway to the store, it is not the case that half of Jill goes to the store; instead, half the path to the store is traversed. However, the theme argument does fall under our notion of directed change. Directed change, then, picks out different arguments than Dowty’s notion of incremental theme.

Nevertheless, all the arguments that fall under our Directed Change Linking Rule but do not count as incremental themes still have a Proto-Patient entailment in Dowty’s system. Specifically, they undergo a change, whether definite or indefinite. The prediction in Dowty’s system, as in ours, is that these arguments will be expressed as direct objects.

Are there, then, any empirical differences between our account and Dowty’s? It turns out that there are. Consider first the telic verbs of inherently directed motion such as *come* and the telic uses of *run* in *Pat came to the house* and *Kelly ran to the school*. On our account the theme argument of these verbs falls under the same linking rule as the theme argument of telic verbs of change of state: the Directed Change Linking Rule. On Dowty’s account the theme argument of the verbs of directed motion falls under the same Proto-Patient entailment as the theme argument of verbs like *roll* since the theme argument of *roll* and verbs like it also has the

Proto-Patient entailment of undergoing a change. For the purposes of comparing the two approaches, the question is whether or not the theme of a telic verb of inherently directed motion ought to be treated like the theme of a verb of change of state like *break* or like the theme of a verb like *roll*.

It appears to us that languages do treat the theme of a verb of inherently directed motion on a par with the theme of a verb of change of state and not on a par with the theme of verbs like *roll*. The relevant evidence was presented in section 4.2, where we showed that the Directed Change Linking Rule takes precedence over the Immediate Cause Linking Rule, since arguments that fall under both rules are expressed in accordance with the Directed Change Linking Rule. Specifically, internally caused verbs of change of state were shown to be unaccusative. But the same is true of verbs of inherently directed motion, as we showed in the same section: these verbs are unaccusative even when used agentively. Further extensive evidence for this point will be provided in chapter 5. There we will also show that verbs like *roll* work differently; these verbs are unergative when they are used agentively. For this reason we have formulated our linking rules so that the *roll* verbs fall under a distinct linking rule. This, then, is evidence that the theme of a verb like *come* ought to be treated on a par with the theme of a verb like *break* and not on a par with the theme of a verb like *roll*, contrary to Dowty's analysis.

It is more difficult to test the predictions of the two approaches concerning atelic verbs of change of state (i.e., the degree achievement verbs). We, of course, predict that such verbs will be unaccusative even if internally caused since the Directed Change Linking Rule takes precedence over the Immediate Cause Linking Rule. Likely candidates for such verbs—that is, internally caused atelic verbs of change of state—are the verbs that B. Levin (1993) has classed as “entity-specific verbs of change of state.” One such verb is *decay*, which is not only an internally caused verb of change of state, but is also atelic. If it turns out that this is the appropriate semantic classification and that such verbs are unaccusative, then we have the relevant evidence. It appears, then, that our notion of directed change makes a better division among the verb classes than Dowty's notion of incremental theme.¹⁵

Does this mean that the notion of incremental theme has no place in the calculation of argument expression? We do not want to make this claim. Dowty makes use of this notion for predicting alternations in the expression of internal arguments of verbs such as *spray* and *load*. It is possible

that when the scope of study is widened to include more verbs with more arguments, the notion of incremental theme will have a place in it. Furthermore, the notion of incremental theme is presumably used by Dowty to predict the selection of the direct object—which he analyzes as the incremental theme—in sentences like (102).

(102) The camel crossed the desert.

On the face of it, this example and others like it are problematic for the approach we have been developing since the argument entailed to undergo a directed change is not obviously expressed as a direct object. Other potentially problematic examples, which Dowty takes to have an incremental theme subject, are listed in (103).

- (103) a. The train entered the station.
b. The crowd exited the hall.
c. The arrow pierced the target.

Dowty notes with skepticism the possibility of an unaccusative analysis for most of these verbs, which would be necessary to allow them to fall under our account. In fact, it appears to us that of the verbs involved, only *enter* and *exit* can plausibly be given an unaccusative analysis, and indeed in many other languages these verbs are not transitive, showing the hallmarks of unaccusative verbs. As for the other examples Dowty cites, it is just possible that in these instances there are two arguments that meet some criterion for expression as direct object, one that is entailed to undergo a directed change and another that is entailed to be an incremental theme. It is possible that, as with the verbs *spray* and *load*, these instances require a more elaborate system of argument selection that encompasses the notion of incremental theme. But what we hope to have shown is that the notion of incremental theme ought not to replace our notion of directed change.

4.4 Conclusion

In this chapter we have introduced four linking rules that essentially isolate three components of meaning relevant to the syntactic classification of verbs. We have also suggested that, at least in the languages we have examined, some of the rules are ordered with respect to each other. The theory of linking that we present in this chapter is not fully articulated. It is designed to deal with the problems raised by intransitive verbs. It is

clear, however, that the linking rules ought to be applicable not just to intransitive verbs. We suspect that our rules are valid for transitive verbs as well; but once the scope of study is broadened, it is fairly clear that other syntactically relevant meaning components will also enter the picture. In that case it is possible that other precedence relations, like the one between the Directed Change Linking Rule and the Immediate Cause Linking Rule, will be found.

What we hope to have demonstrated here is that once the appropriate syntactically relevant meaning components are isolated, the syntactic expression of arguments turns out to be more systematic than it might have appeared to be. We also have tried to broaden the range of phenomena that need to be handled by any account of the syntactic expression of arguments. It is clear, however, that even in the domain of intransitive verbs, there are classes of verbs we have not yet fully scrutinized. To cite one example, among these classes are verbs like *swarm* that participate in the intransitive version of the locative alternation.

Chapter 5

Verbs with Multiple Meanings

In chapter 1 we stressed the importance of isolating those aspects of verb meaning that are relevant to the syntax. In evaluating whether the actual syntactic classification of a verb as unaccusative or unergative is the classification that is expected given its meaning, it is important to begin by carefully determining the meaning of the verb under consideration, especially with respect to the syntactically relevant aspects of meaning. Failure to do this has meant that some attempts to compare verbs from different languages that appear to be translation equivalents are flawed. As discussed in chapters 1, 3, and 4, verbs said to be translation equivalents may differ in just those aspects of meaning that are relevant to determining a verb's class membership. However, even in the analysis of the verbs of a single language, the same care must be taken in determining verb meaning: a single verb may be associated with a range of meanings differing from each other in precisely the syntactically relevant aspects of meaning, leading to different classifications of the verb on the different meanings.

It appears that all languages show—although to varying degrees—the phenomenon that Apresjan (1973, 1992) terms “regular polysemy”: instances of polysemy that are consistently exhibited by words with certain types of meanings (see also Ostler and Atkins 1991). For instance, in English and Russian, at least, nouns such as *reel* and *cup* that name containers can often be used to refer to the quantity of a substance held by that container (*a reel of thread, a cup of milk*). Apresjan notes that there are instances of regular polysemy involving verbs as well. Atkins, Kegl, and B. Levin (1988) discuss one such example. They show that the verb *bake* can be associated with both a change-of-state meaning, as in *Max baked the potatoes*, and a creation meaning, as in *Max baked a pound cake*. Furthermore, these two meanings are associated with other verbs of cooking as well; thus, verbs of cooking manifest regular polysemy.