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**Unaccusativity**

At the Syntax-Lexical  
Semantics Interface

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*break*. Rather, in these instances there is evidence that the intransitive variant is basic. Thus, the apparent counterexamples to our analysis actually turn out to support it.

### 3.2.1 Internal versus External Causation

Our task is to semantically characterize verbs such as *break* and *open* that have transitive causative uses as well as intransitive noncausative uses. In order to do this, we compare verbs such as *break* and *open* that participate in the causative alternation—and thus show both transitive and intransitive uses—with verbs such as *laugh*, *play*, and *speak* that show intransitive uses but never show transitive causative uses (except perhaps under very special circumstances). We ask what makes verbs like *break* and *open* different from those verbs that are not regularly paired with a transitive causative counterpart. In answering this question, we take as our starting point Smith's (1970) insightful discussion of the semantic factors that play a part in determining which verbs that are used intransitively have transitive causative uses.

Smith characterizes the difference between those intransitive verbs that do and do not have transitive causative uses by means of a notion of control. Verbs like *break* and *open*, Smith proposes, describe eventualities that are under the control of some external cause that brings such an eventuality about. Such intransitive verbs have transitive uses in which the external cause is expressed as subject. Verbs like *laugh*, *play*, and *speak* do not have this property: the eventuality each describes “cannot be externally controlled” but “can be controlled only by the person engaging in it”; that is, control “cannot be relinquished” to an external controller (Smith 1970:107). Smith takes the lack of a causative transitive use for these verbs (and other verbs such as *shudder*, *blush*, *tremble*, *malingering*, and *hesitate*) to be a reflection of the presence of “internal control”; we return in section 4.1.1.3 to the question of why verbs of internal control should have this property.

- (18) a. Mary shuddered.  
 b. \*The green monster shuddered Mary.  
 c. The green monster made Mary shudder.  
 (Smith 1970:107, (35a–c))

Similar distinctions have been recognized in other work on English (e.g., Hale and Keyser 1987) and other languages (e.g., Guerssel 1986 on Berber, Labelle 1990, 1992 on French).

For reasons we explain below, we do not use Smith's notion of control. Rather, we use a slightly different notion, distinguishing between *internally* and *externally caused* eventualities. With an intransitive verb describing an internally caused eventuality, some property inherent to the argument of the verb is “responsible” for bringing about the eventuality. For agentive verbs such as *play* and *speak*, this property is the will or volition of the agent who performs the activity. Thus, the concept of internal causation subsumes agency. However, an internally caused verb need not be agentive. For example, the verbs *blush* and *tremble*, which take animate—though nonagentive—arguments, can nevertheless be considered to describe internally caused eventualities, because these eventualities arise from internal properties of the arguments, typically an emotional reaction. These verbs, which do not participate in the causative alternation, also exemplify why the notion of control is inappropriate: neither trembling nor blushing is generally under a person's own control, as shown by the acceptability of examples such as *Carla couldn't help blushing whenever her name was called*.

Verbs with an inanimate—and thus clearly nonagentive—single argument may also describe internally caused eventualities in the sense that these eventualities are conceptualized as arising from inherent properties of their arguments. In particular, the notion of internal causation can be straightforwardly extended to encompass a class of nonagentive single argument verbs that we refer to as *verbs of emission*. This set subsumes the verbs that Perlmutter describes as verbs of “[n]on-voluntary emission of stimuli that impinge on the senses” (1978:163). The verbs of emission can be divided into four subclasses according to what is emitted: sound, light, smell, or substance.<sup>8</sup>

- (19) a. Sound: burble, buzz, clang, crackle, hoot, hum, jingle, moan, ring, roar, whir, whistle, ...  
 b. Light: flash, flicker, gleam, glitter, shimmer, shine, sparkle, twinkle, ...  
 c. Smell: reek, smell, stink  
 d. Substance: bubble, gush, ooze, puff, spew, spout, squirt, ...

The class of verbs cited by Perlmutter (1978) includes members of only three of these subclasses (the verbs of sound, light, and smell emission); however, since the overall behavior of these three types of verbs resembles that of the members of the subgroup identified here as “verbs of substance emission,” all four sets of verbs will be treated as belonging to a single larger class of verbs of emission.

The eventualities described by such verbs come about as a result of internal physical characteristics of their argument. Consequently, only a limited set of things qualify as arguments of any specific verb of emission, as reflected in the strong restrictions that these verbs impose on possible subjects. For example, only embers, lights, and certain substances glow since only they have the necessary properties, and the same holds of other verbs of emission. Consistent with their classification as internally caused verbs, verbs of emission generally do not have causative counterparts, as illustrated in (20). (We return in section 3.2.5 to instances in which they do.)

- (20) a. The jewels glittered/sparkled.  
 b. \*The queen glittered/sparkled the jewels.
- (21) a. The stream burbled/roared.  
 b. \*The rocks burbled/roared the stream.
- (22) a. The stew bubbled.  
 b. \*The cook bubbled the stew.

Verbs of emission, then, pattern with other verbs without causative counterparts even though it seems inappropriate to attribute control to the argument of a verb of emission—the inanimate emitter. Consequently, we prefer the internally/externally caused verb distinction to the internal/external control distinction. (For conciseness, we will refer to internally or externally caused verbs, although it is more accurate to say that a verb describes an eventuality that can be conceptualized as either internally or externally caused.)

Unlike internally caused verbs, externally caused verbs by their very nature imply the existence of an “external cause” with immediate control over bringing about the eventuality described by the verb: an agent, an instrument, a natural force, or a circumstance. Thus, consider the verb *break*. Something breaks because of the existence of an external cause; something does not break solely because of its own properties (although it is true that an entity must have certain properties in order for it to be breakable). Although it might be possible to conceive of something as breaking spontaneously, even so, it is most natural to describe such a situation by a sentence like *The vase broke by itself*, where, as mentioned in section 3.1, the external cause is being overtly identified with the theme itself. In contrast, internally caused verbs such as *glow*, *sparkle*, *shudder*, and *tremble* cannot appear with the phrase *by itself* in the ‘without outside help’ sense, consistent with the absence of an external cause.<sup>9</sup>

- (23) a. \*The diamond glowed by itself.  
 b. \*Jane trembled by herself.

Some externally caused verbs such as *break* can be used intransitively without the expression of an external cause, but, even when no cause is specified, our knowledge of the world tells us that the eventuality these verbs describe could not have happened without an external cause. We thus assume that the intransitive verbs that regularly have transitive causative uses are externally caused, and those intransitive verbs that do not are internally caused. (In section 3.2.5 we will show that some internally caused intransitive verbs do have transitive causative uses, but we conclude that such pairs are instances of a different phenomenon.) A closer look at the class of alternating verbs will bear out this suggestion.

The core class of causative alternation verbs are the verbs of change of state, which typically describe changes in the physical shape or appearance of some entity. Jespersen (1927) suggests that the class of verbs that are found in the causative alternation can be characterized as the “move and change” class, because it includes a variety of verbs of change of state and verbs of motion. The list of alternating verbs can easily be divided into two subclasses along these lines.

- (24) a. bake, blacken, break, close, cook, cool, dry, freeze, melt, open, shatter, thaw, thicken, whiten, widen, ...  
 b. bounce, move, roll, rotate, spin, ...

Relatively few verbs of motion participate in the causative alternation; those that do are not necessarily agentive when used intransitively, consistent with our claim that alternating verbs are externally caused. (In section 3.2.5 we examine the causative uses of agentive verbs of manner of motion such as *walk* and *swim*, which because of their agentiveness must be internally caused verbs, and we argue that these causatives represent a distinct phenomenon.) To the extent that the alternating verbs of motion involve a change of position (though not necessarily a translation through space), the set of “move and change” verbs might be given the unified characterization *verbs of change*. There are, however, many more verbs of change of state than verbs of change of position among the alternating verbs, probably because there are few verbs of change of position that need not be agentive, a prerequisite for the classification of these verbs as externally caused.

The difference between internally and externally caused verbs is also reflected in the general pattern of selectional restrictions on the cause

argument of the two kinds of verbs. Many nonagentive internally caused verbs exert strong restrictions on their single argument. For instance, as mentioned above, only a limited set of things qualify as the arguments of any specific verb of emission, so that only embers, lights, and certain substances glow, since only they have the necessary properties; similar restrictions hold of other verbs of emission. Although this property might seem to make the single argument of an internally caused verb resemble the argument of the noncausative use of alternating externally caused verbs such as *break*, which is also subject to strong restrictions arising from the nature of the change of state described by the verb, the appropriate comparison is between the external cause argument of an externally caused verb and the single argument of an internally caused verb. Unlike most internally caused verbs, most externally caused verbs do not impose restrictions on their external cause argument, taking agents, natural forces, and instruments as the external cause. This difference reflects the nature of internal causation, which involves causation initiated by, but also residing in, the single argument and hence dependent on its properties. In contrast, with externally caused verbs, the external cause argument sets the eventuality in motion, but it is not necessarily involved in seeing it through (verbs differ in this respect).

We return now to the lexical semantic representations for the alternating and nonalternating intransitive verbs proposed in (5) and (6), repeated here.

(25) *break*: [[x DO-SOMETHING] CAUSE [y BECOME *BROKEN*]]

(26) *laugh*: [x *LAUGH*]

As we stated in section 3.1, our proposal concerning the basic adicity of the alternating verbs influenced the choice of representation; the representation is also intended to reflect the fact that such verbs are externally caused verbs, involving two subevents. Abstracting away from the lexical semantic representations suggested for the verbs *break* and *laugh*, we propose that the lexical semantic templates associated with externally and internally caused verbs are as in (27a) and (27b), respectively.

(27) a. [[x DO-SOMETHING] CAUSE [y BECOME *STATE*]]  
 b. [x *PREDICATE*]

It is in the nature of internally caused verbs as we have described them that they are inherently monadic predicates. Similarly, externally caused verbs are inherently dyadic predicates, taking as arguments both the ex-

ternal cause and the passive participant in the eventuality. The adicity of a verb is then a direct reflection of a lexical semantic property of the verb, namely, the number of open positions in the lexical semantic representation.<sup>10</sup>

The proposed analysis of externally caused verbs predicts that there should be no externally caused verbs without a transitive variant. An examination of the range of verb classes in B. Levin 1993 suggests that this is indeed so. That is, all externally caused verbs have a transitive causative use, but not all of them have an intransitive use in which the external cause is unspecified, as illustrated in (28)–(31) with the verbs *cut*, *sterilize*, *write*, and *murder*.

(28) a. The baker cut the bread.  
 b. \*The bread cut.

(29) a. The nurse sterilized the instruments.  
 b. \*The instruments sterilized.

(30) a. Anita Brookner just wrote a new novel.  
 b. \*A new novel wrote.

(31) a. The assassin murdered the senator.  
 b. \*The senator murdered.

The English suffix *-ize* is particularly interesting, as is the suffix *-ify*. These suffixes are used to form novel externally caused verbs from adjectives and nouns. We have collected a list of recently coined words with these suffixes (e.g., *windowize a computer*, *Aspenize Jackson Hole*, *securitize planes*), and these coinages support the prediction that there are no externally caused verbs without a transitive variant. As shown by the example in (29), many *-ize* and *-ify* verbs are only transitive, and none of the new verbs we have found are exclusively intransitive.

In English adjectives are used to describe states, and not surprisingly, many alternating verbs of change of state are deadjectival, as shown by the examples in (32), taken from Levin 1993:28. These deadjectival verbs have been divided into two groups, one in which the verbs are zero-related to adjectives, as in (32a), and a second in which the verbs are formed from adjectives through the use of the suffix *-en*, as in (32b).

(32) a. brown, clean, clear, cool, crisp, dim, dirty, dry, dull, empty, even, firm, level, loose, mellow, muddy, narrow, open, pale, quiet, round, shut, slack, slim, slow, smooth, sober, sour, steady, tame, tan, tense, thin, warm, yellow, . . .

- b. awaken, blacken, brighten, broaden, cheapen, coarsen, dampen, darken, deepen, fatten, flatten, freshen, gladden, harden, hasten, heighten, lengthen, lessen, lighten, loosen, moisten, neatén, quicken, quieten, redden, ripen, roughen, sharpen, shorten, sicken, slacken, smarten, soften, steepen, stiffen, straighten, strengthen, sweeten, tauten, thicken, tighten, toughen, waken, weaken, whiten, widen, worsen, ...

What is relevant for us is that the adjectives that form the base for alternating verbs of change of state support the proposal that such verbs are externally caused. As pointed out by Dixon (1982), deadjectival verbs of this type tend to be related to adjectives that describe physical characteristics, color, and temperature. More generally, these verbs are related to stage-level adjectives and not to individual-level adjectives. The distinction between stage-level and individual-level predicates is introduced by Carlson (1977). Stage-level predicates describe temporary properties or transitory activities of entities; they contrast with individual-level predicates, which describe permanent properties (see also Diesing 1992, Kratzer 1989). The observation that deadjectival verbs are based on stage-level adjectives supports the claim that only externally caused verbs are found in the causative alternation: individual-level properties typically cannot be externally caused, whereas stage-level properties could be. (We do not address a larger question that is raised by these data: whether both oppositions are necessary.)

The verb *smarten* provides a particularly interesting illustration of the constraints on the adjectives that can serve as the base for alternating verbs. Although the adjective *smart* has two senses, 'intelligent' and 'well and fashionably dressed', the verb *smarten* is related to the second adjectival sense, reflecting the fact that it is typically only in this sense that the adjective describes a stage-level property, and, hence, a property that might be caused to change. Dowty (1979:129, n. 4) discusses several deadjectival verbs that do not show some of the senses of their base adjective. For example, he notes that although the adjective *tough* can mean either 'difficult' or 'resistant to tearing', the verb *toughen* cannot mean 'make difficult'. It seems to us that the stage-level versus individual-level distinction could be responsible for the set of senses available to *toughen*, as well as for those available to some of the other verbs that Dowty cites.

The interaction between the stage-level/individual-level predicate contrast and the internal/external causation contrast can also be used to explain why there is sometimes a verb related to only one member of a

pair of antonymous adjectives. For instance, although there are verb pairs such as *harden* and *soften* or *widen* and *narrow* based on antonymous adjectives, corresponding to the verb *tame* there is no verb *wild* or *wilden*. Our analysis suggests that the absence of this verb is no accident. Rather, it follows because the adjective *wild*, unlike the adjective *tame*, necessarily describes an individual-level predicate and thus cannot be the basis for an externally caused verb of change of state.

Although the major class of causative alternation verbs can be characterized as verbs of change, it is important to point out that external causation cannot be equated with change of state or position. There are verbs of change of state that lack a transitive causative variant whatever the nature of the external cause argument, as the following examples show:

- (33) a. The cactus bloomed/blossomed/flowered early.  
 b. \*The gardener bloomed/blossomed/flowered the cactus early.  
 c. \*The warm weather bloomed/blossomed/flowered the cactus early.
- (34) a. The logs decayed.  
 b. \*The rangers decayed the logs.  
 c. \*The bad weather decayed the logs.

These verbs are set apart from the alternating verbs of change of state because they describe internally caused changes of state. That is, the changes of state that they describe are inherent to the natural course of development of the entities that they are predicated of and do not need to be brought about by an external cause (although occasionally they can be, and in such instances causative uses of these verbs are found). This class includes verbs such as *flower*, *bloom*, *blossom*, and *decay*, all cited above, and in some languages *blush*, as well as *grow*.<sup>11</sup> The class of internally caused verbs of change of state is much smaller than the large class of externally caused verbs of change of state.

The distinction between internally and externally caused eventualities is also relevant to verbs that are not verbs of change. For example, it explains the behavior of the members of a class of verbs that we call *verbs of spatial configuration* with respect to the causative alternation. This class includes verbs such as *hang*, *sit*, and *stand*, which specify the position of an entity that bears a particular spatial configuration with respect to that position; we discuss these verbs in more detail in section 3.3.3. Certain verbs of spatial configuration allow a transitive causative use; these include *hang*, *lean*, *lie*, *sit*, and *stand*.

- (35) a. The laundry hung on the clothesline.  
 b. Tracy hung the laundry on the clothesline.
- (36) a. The ladder leaned against the wall.  
 b. I leaned the ladder against the wall.

Other verbs in this class, including *slouch*—though rather close in meaning to *lean*—and *loom*, do not.

- (37) a. The surly youth slouched against the wall.  
 b. \*I slouched the surly youth against the wall.
- (38) a. The bear loomed over the sleeping child.  
 b. \*The giant loomed the bear over the sleeping child.

The distinction between internally and externally caused eventualities appears to provide the key to their differing behavior. Looming and slouching are postures that are necessarily internally caused, unlike hanging, leaning, sitting, or standing, which are postures that can be brought about by an external cause. These examples show yet another way in which the correlation between external causation and change of state is not perfect: there are externally caused verbs that are not verbs of change of state.

We conclude our introduction of the distinction between internally and externally caused verbs by relating it to the unaccusative/unergative distinction, previewing the discussion in chapter 4. The distinction between internally and externally caused verbs corresponds roughly to the distinction between unaccusative and unergative verbs. As we show in chapter 4, internally caused verbs are generally unergative, whereas many unaccusative verbs are derived from externally caused verbs. There are two reasons for saying that there is only a rough correspondence between the internally/externally caused verb distinction and the unaccusative/unergative distinction. First, as we show in section 3.3, there are unaccusative verbs that are not derived from causative verbs; these are the verbs of existence and appearance. Second, as we have just shown, there is a class of internally caused verbs of change of state, and, as we show in section 4.2.1, these verbs are unaccusative.

### 3.2.2 Consequences of the Internally versus Externally Caused Distinction

The distinction between internally and externally caused eventualities is a distinction in the way events are conceptualized and does not necessarily correspond to any real difference in the types of events found in the world. In general, the relation between the linguistic description of events and the

### 3.2.3 When Can Externally Caused Verbs "Detransitivize"?

In the previous section we proposed that all externally caused verbs are basically dyadic. However, although we proposed that the intransitive form of an alternating verb like *break* is derived from the causative form, only a subset of externally caused verbs have such intransitive uses.

- (42) a. The baker cut the bread.  
 b. \*The bread cut. (on the interpretation 'The bread came to be cut')
- (43) a. The terrorist killed/assassinated/murdered the senator.  
 b. \*The senator killed/assassinated/murdered.
- (44) a. Anita Brookner just wrote a new novel.  
 b. \*A new novel wrote.

Furthermore, alternating verbs often show the intransitive form only for some choices of arguments, as discussed in section 3.1. In this section we address the following question: when can externally caused verbs turn up as intransitive verbs, and why is this possibility open to some verbs only for certain choices of arguments? We continue to draw on the insights in Smith 1970 to reach an understanding of this phenomenon, which, in turn, is crucial to understanding unaccusativity, given our proposal that a large class of unaccusative verbs are basically causative dyadic verbs.

Smith proposes that the verbs of change that may be used intransitively are precisely those in which the change can come about independently "in the sense that it can occur without an external agent" (1970:102). Smith's observation can also be recast as follows: the transitive causative verbs that detransitivize are those in which the eventuality can come about spontaneously without the volitional intervention of an agent. In fact, among the transitive verbs that never detransitivize are verbs that require an animate intentional and volitional agent as subject. Consider some verbs that never detransitivize, such as the verbs *murder* and *assassinate* or the verbs of creation *write* and *build*. These particular verbs require an animate intentional and volitional agent as subject.

- (45) a. The terrorist assassinated/murdered the senator.  
 b. \*The explosion assassinated/murdered the senator.
- (46) a. Pat wrote a letter to the editor of the local newspaper.  
 b. \*My anger wrote a letter to the editor of the local newspaper.
- (47) a. A local architect built the new library.  
 b. \*The windstorm built a sand dune.

Since these verbs have meanings that specify that the eventuality they describe must be brought about by a volitional agent, the change they specify obviously cannot come about independently. In contrast, the change specified by alternating verbs such as *break* can come about without the intervention of a volitional agent. Consequently, alternating verbs allow natural forces or causes, as well as agents or instruments, as external causes, and, hence, as subjects.

- (48) The vandals/The rocks/The storm broke the windows.

Next consider the verb *cut*. As shown in (42), this verb cannot be used intransitively to describe the coming about of a separation in the material integrity of some entity. The behavior of this verb can be understood in the context of the proposed constraint since what characterizes its meaning is a specification of the means or manner involved in bringing about the action described by that verb; this specification, in turn, implies the existence of a volitional agent. The very meaning of the verb *cut* implies the existence of a sharp instrument that must be used by a volitional agent to bring about the change of state described by the verb. If the same change of state were to come about without the use of a sharp instrument, then it could not be said to have come about through cutting. A verb like *cut* demonstrates that the set of verbs that do not detransitivize is not the same as the set of verbs that restrict their subjects to volitional agents. The verb *cut* allows instruments or agents as subjects; however, *cut* does not allow natural force subjects.<sup>12</sup>

- (49) a. The baker/That knife cut the bread.  
 b. \*The lightning cut the clothesline.

The proposed constraint on detransitivization may explain the behavior of the verb *remove*, which does not have an intransitive form. Its non-existence might seem somewhat surprising since to a first approximation this verb's meaning might be paraphrased as 'cause to become not at some location'. However, a closer look at its meaning reveals that the eventuality it describes is brought about by a volitional agent, as shown by the oddness of the examples in (50), which have inanimate nonvolitional subjects.

- (50) a. ??The wind removed the clouds from the sky.  
 (cf. The wind cleared the clouds from the sky.)  
 b. ??The water removed the sand from the rocks.  
 (cf. The water washed the sand from the rocks.)

In B. Levin and Rappaport Hovav 1994 we show that the approach developed here can explain why verbs formed with the suffixes *-ize* and *-ify* cannot typically detransitivize, as the data in (51)–(52) illustrate, even though these affixes have been characterized as “causative” (see, for example, the discussion of these suffixes in Marchand 1969).

- (51) a. The farmer homogenized/pasteurized the milk.  
b. \*The milk homogenized/pasteurized.
- (52) a. Carla humidified her apartment.  
b. \*Her apartment humidified.

Most of these morphologically complex verbs cannot detransitivize, we propose, because they describe eventualities that cannot come about spontaneously without the external intervention of an agent. In contrast, those *-ify* and *-ize* verbs that allow for this possibility appear to be precisely the ones that do detransitivize.

- (53) a. I solidified the mixture./The mixture solidified.  
b. The cook caramelized the sugar./The sugar caramelized.

Again, the *-ify* and *-ize* verbs that resist detransitivization show a narrower range of subjects than those verbs that permit detransitivization; specifically, they appear to exclude natural force subjects.

- (54) a. \*The weather humidified the apartment.  
b. The intense heat caramelized the sugar.

The constraint on detransitivization also explains why some verbs have intransitive uses only for certain choices of the argument that changes state: it is only for these choices that the change can come about without the intervention of an agent. For instance, in section 3.1 we noted the following contrasts involving the verb *clear*:

- (55) a. The waiter cleared the table.  
b. \*The table cleared.
- (56) a. The wind cleared the sky.  
b. The sky cleared.

Our knowledge of the world tell us that tables are things that are cleared (typically, of dishes) through the intervention of an animate agent. The sky, however, can clear through the intervention of natural forces, such as the wind. Hence the difference in the possibility of intransitive counterparts.

In this context, we can also understand the contrast presented in section 3.1, and repeated here, involving the verb *lengthen*.

- (57) a. The dressmaker lengthened the skirt.  
b. \*The skirt lengthened.
- (58) a. The mad scientist lengthened the days.  
b. The days lengthened.

Skirts can only be lengthened through the intervention of an agent; hence, the verb *lengthen* as applied to skirts is not typically used intransitively. Days, on the other hand, become longer as the earth progresses through a certain part of its orbit around the sun, something that happens without the intervention of an animate agent. And *lengthen* as applied to days is typically used intransitively, although in a science fiction context where artificial manipulation of the length of days is possible, transitive uses might be found, as in (58a).

We can return here to the instances of *break*, cited in (9) and repeated here, which do not detransitivize.

- (59) a. He broke his promise/the contract/the world record.  
b. \*His promise/The contract/The world record broke.

Again, this verb does not detransitivize for these choices of object because the eventuality it describes cannot come about without the intervention of an agent for these choices. The examples in (55)–(59) show once again that detransitivization is possible precisely where an externally caused eventuality can come about without the intervention of an agent. In this sense, detransitivization is a productive process, since it appears to be possible wherever this condition is met.

Our study of the factors that influence a verb's transitivity suggests that verbs can be classified according to whether or not they describe an externally caused eventuality and according to whether or not they describe an eventuality that can occur spontaneously. If the eventuality described by a verb has an external cause, the verb is basically transitive; moreover, if this eventuality can occur without the direct intervention of an agent, then the external cause does not have to be expressed in the syntax. Given the similarities between these two notions, the question arises whether they might be collapsed. In fact, Haspelmath (1993) has independently developed an analysis that resembles the one presented here, except that he does not make a clear distinction between the two notions. Haspelmath links the likelihood of spontaneous occurrence to intransitivity, and al-



though he is not explicit about this, it appears that he takes spontaneous occurrence to be the opposite of external causation, so that if a particular event does not occur spontaneously, then it is externally caused and thus expressed with a transitive verb. For Haspelmath, those verbs that describe eventualities that are likely to occur spontaneously will have an intransitive form, and those that are not likely to occur spontaneously will have only a transitive form. Thus, the verbs *wash* and *decapitate* will have only a transitive form, and the verbs *break* and *laugh* will both have intransitive forms.

It seems to us that there is evidence that favors the use of both spontaneous occurrence and external causation in the determination of transitivity, as in our approach. The evidence comes from an observation that Haspelmath himself makes. He notes that across languages certain intransitive verbs like *break* tend to be the morphologically marked member of a causative alternation verb pair, whereas others like *laugh* tend to be the morphologically unmarked member. It turns out, as he notes, that those verbs which like *break* describe eventualities that are both spontaneously occurring and externally caused are the ones that tend to have the intransitive form as the morphologically marked one. Those which like *laugh* describe eventualities that occur spontaneously and are internally caused tend to have the transitive member of a causative alternation pair morphologically marked. That is, among verbs describing spontaneously occurring eventualities, it is the status of the eventuality as internally or externally caused that determines the morphological shape of the verb. This difference justifies the recognition of both notions as contributing to a verb's syntactic behavior and morphological shape. In some sense, Haspelmath's study provides cross-linguistic corroboration of the results we obtained from our in-depth study of English.

### 3.2.4 The Derivation of the Intransitive Use of Externally Caused Verbs

In this section we propose an account of how the intransitive use of an externally caused verb arises. As a first step, we refine and reformulate the constraint on detransitivization. In the previous section we observed that alternating verbs do not usually exert any restrictions on the external cause argument: it can be an agent, instrument, circumstance, or natural force. As for verbs that do exert restrictions on the external cause argument—that is, the nonalternating verbs—they appear to exert a rather limited range of restrictions on it. Parsons (1990) observes that there appears to be no verb that is lexically specified to take only an instrument

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

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

### 3.3 Verbs of Existence and Appearance

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

semantic representation we attributed to the alternating externally caused verbs. In chapter 4 we establish that they are unaccusative, taking two internal arguments. In section 3.3.3 we introduce a subclass of the verbs of existence, the simple position verbs, and show that although many of them have a causative use, they also do not participate in the causative alternation, as narrowly defined in section 3.2.5.

### 3.3.1 Verbs of Existence and Appearance Introduced

As argued in many studies (Clark 1978, Kimball 1973, Lyons 1967, and works cited therein), there is a relationship between existence and location. For instance, noting the deictic origin of English *there* and similar elements that characterize existential sentences in European languages, Lyons writes that "it might appear reasonable to say that all existential sentences are at least implicitly locative (the term 'locative' being taken to include both temporal and spatial reference)" (1967:390). We follow these studies in taking verbs of existence to be verbs having two arguments: one describing the entity that exists and the other describing the location at which this entity exists. Thus, we claim that verbs of existence are basically dyadic, although, since we argue in chapter 4 that they are unaccusative, we propose that they take two internal arguments rather than an internal and an external argument like verbs of change of state.

More recently, Hoekstra and Mulder (1990) and Mulder and Wehrmann (1989) have also explored the properties of verbs of existence. Mulder and Wehrmann recognize that verbs of existence describe eventualities that involve two participants: a theme (i.e., an entity whose existence is asserted) and a location. However, Mulder and Wehrmann, and following them Hoekstra and Mulder, treat these verbs as monadic verbs taking a small clause internal argument, which itself contains theme and location arguments. We discuss a problem with the small clause account in section 6.7 in the context of our investigation of locative inversion. Here we merely emphasize that there is general agreement that verbs of existence are associated with a theme and a location.

Verbs of appearance and verbs of existence are related semantically. A verb of appearance can be viewed as a verb of coming into existence. Alternatively, a verb of existence can be seen as a verb that describes the state resulting from the appearance of some entity; in fact, Kimball writes, "The concept of existence is, I claim, formed semantically (and grammatically) as the perfective of coming into being" (1973:267). It is unclear to us which of the two characterizations is correct or whether both are plau-

sible, and it is beyond the scope of this book to determine this. All that matters for our purposes is the existence of a semantic relationship between the two. Verbs of disappearance, such as *disappear* and *vanish*, also belong in the larger class of verbs of existence and appearance, since they can be considered to be verbs of coming not to exist.

Support for treating the verbs of appearance, the verbs of disappearance, and the verbs of existence together comes from the fact that these three types of verbs share a variety of properties, although for some purposes the classes need to be kept distinct. First, all three types of verbs require a location argument—and, if there is no overt location argument, one is understood. Second, verbs of existence and appearance are the verbs most commonly found in the locative inversion construction, which we discuss in detail in chapter 6, and the *there*-insertion construction, which we discuss briefly in chapter 4; as we note in these discussions, verbs of disappearance are independently excluded from these constructions.

- (94) a. In front of her appeared a fabulous sight.  
 b. In the desert flourished a utopian community.
- (95) a. There appeared a ship on the horizon.  
 b. There exists a solution to that problem.

Finally, all three types of verbs consistently lack causative variants. This property will be central to our consideration of whether the causative analysis proposed for externally caused verbs of change of state is also applicable to these verbs.

- (96) a. My mother lived in Boston.  
 b. \*Her job lived my mother in Boston.
- (97) a. A picture appeared (on the screen).  
 b. \*The programmer appeared a picture (on the screen).
- (98) a. The bicycle disappeared (from the garage).  
 b. \*The thief disappeared the bicycle (from the garage).

### 3.3.2 Evidence against a Causative Analysis

With this background, we turn now to evidence that the causative analysis is inappropriate for the verbs of existence and appearance. We do this by reviewing those arguments previously used to support the causative analysis of the alternating intransitive verbs that would be expected to extend to the verbs of existence and appearance. For instance, given the lack of a

causative form, the argument from selectional restrictions is inappropriate and is not considered.

First, consider the phenomenon that Chierchia terms "unstable valency." It is striking that this property does not extend to verbs of appearance and existence, even though they are also considered to be unaccusative. The examples in (99)–(102) illustrate the inability of such verbs to participate in the causative alternation in several languages that we are familiar with.<sup>19</sup>

(99) *English*

- a. i. A star appeared in the sky.
- ii. \*The darkness appeared a star in the sky.
- b. i. An explosion occurred.
- ii. \*The gas leak occurred an explosion.
- c. i. A solution exists.
- ii. \*The mathematician existed a solution.

(100) *Modern Hebrew*

- a. i. Koxav hofia.  
star appeared  
'A star appeared.'
- ii. \*Ha-xošex hofia koxav.  
the-darkness appeared star
- b. i. Er'a hitpocecut.  
happened explosion  
'An explosion happened.'
- ii. \*Dlifat ha-gaz er'a hitpocecut.  
leak the-gas happened explosion
- c. i. Ha-pitaron nimca be'amud 90.  
the-solution is found on page 90  
'The solution is found on page 90.'
- ii. \*Ha-mexaber himci et ha-pitaron be'amud 90.  
the-author made be found ACC the-solution on page 90
- iii. Ha-mexaber maca et ha-pitaron be'amud 90.  
the-author found ACC the-solution on page 90  
'The author found the solution on page 90.' (wrong interpretation)

(101) *Italian*

- a. i. È apparsa una stella.  
is appeared a star  
'A star appeared.'

- ii. \*La notte a apparso una stella.  
the night has appeared a star
- b. i. Accadono delle cose strane qui.  
happen some things strange here  
'Some strange things are happening here.'
- ii. \*Il vento accade delle cose strane qui.  
the wind happens some things strange here
- c. i. La risposta si trova a pagina 90.  
the answer REFL finds on page 90  
'The answer is found on page 90.'
- ii. Lo scrittore ha trovato la risposta a pagina 90.  
the writer has found the answer on page 90  
'The writer found the answer on page 90.' (wrong interpretation)

(102) *Russian*

- a. i. Zvezda pojavila-s' na nebe.  
star appeared-REFL in sky  
'A star appeared in the sky.'
- ii. \*Noč' pojavila zvezdu na nebe.  
night appeared star in sky
- b. i. Proizošël vzryv.  
occurred explosion  
'An explosion occurred.'
- ii. \*Utëčka gaza proizošla vzryv.  
leak gas occurred explosion
- c. i. Suščestvuet rešenie.  
exists solution  
'A solution exists.'
- ii. \*Matematik suščestvil rešenie.  
mathematician existed solution
- d. i. Rešenie ètoj zadačy naxodit-sja na stranica 90.  
solution this assignment finds-REFL on page 90  
'A solution to this assignment is found on page 90.'
- ii. Student našël rešenie ètoj zadačy na stranica 90.  
student found solution this assignment on page 90  
'The student found the solution to this assignment on page 90.' (wrong interpretation)

Those verbs listed above that are morphologically related to transitive verbs, such as the Modern Hebrew verb *nimca* 'be found' (related to *maca*

'find') or its Russian and Italian counterparts *naxodit'sja* 'be found' and *trovarsi* 'be found' (related to *naxodit* 'find' and *trovare* 'find'), cannot be related to them by the semantic relation that characterizes the transitive and intransitive variants of a verb such as *break*. Specifically, these intransitives are stative, unlike the intransitive form of verbs such as *break*. Consequently, there is no reason to believe that *The solution is found on page 90* is semantically derived from *Something caused the solution to be found on page 90*, as the causative analysis would predict. (Although it is striking that three languages have similar pairs, suggesting that there is more to be said here.)

Chierchia (1989) suggests that unaccusative verbs without a transitive causative form are idiosyncratically marked for the nonlexicalization of this form. However, since a semantically coherent subset of the unaccusative verbs consistently lacks this form in a variety of languages, this phenomenon does not seem to be idiosyncratic at all, casting doubt on an analysis that takes these verbs to have a causative lexical semantic representation.

The morphological shape of the verbs of existence and appearance also does not provide any support for a causative analysis, further distinguishing these verbs from the causative alternation verbs. As we have pointed out several times, the intransitive form of a causative alternation verb is morphologically complex in many languages, being derived from the causative form. Often it is derived from the causative form via a reflexive affix (Chierchia 1989, Marantz 1984, Nedyalkov and Silnitsky 1973, among others). That is, this variant is associated with the morphological form used to derive the intransitive *dress* of *She dressed* (meaning 'She dressed herself') from transitive *dress*. This is the case, for instance, in French, Italian, Modern Hebrew, and Russian. A perusal of the morphological shape associated with the verbs of existence and appearance listed in (99)–(102) shows that there is no general pattern suggesting a transitive causative source—even a nonlexicalized one—for these verbs. In particular, there is no association of reflexive morphology with these verbs. For example, in Modern Hebrew the verbs in these classes typically show the patterns Pa'al, Nif'al, or Hif'il, which are never associated with a reflexive interpretation, unlike the Hitpa'el pattern used for the causative alternation verbs (see section 3.2.5). In the Romance languages hardly any of these verbs have the reflexive morpheme (*se/si*). We have found only one such verb, which interestingly has a counterpart with this morphological shape in Russian; this is the verb glossed as 'be found'.

- (103) a. *trovarsi* 'be found'/*trovare* 'find' (Italian)  
 b. *se trouver* 'be found'/*trouver* 'find' (French)

In Russian verbs of existence and appearance vary in their morphological shape. Some have the reflexive morpheme *-sja*, though they are rarely related to transitive verbs lacking this morpheme, as the examples in (104) illustrate, whereas others do not have the reflexive morpheme (e.g., *suščestvovat* 'exist', *proiziditi* 'occur').<sup>20</sup>

- (104) a. *pojavit'sja* 'appear'/\**pojavit*'  
 b. *slučit'sja* 'occur'/\**slučit*' (exists, but with the wrong meaning)  
 c. *naxodit'sja* 'exist/be found'/\**naxodit*' 'find'  
 d. *okazat'sja* 'turn out'/\**okazat*' (transitive)  
 e. *ostat'sja* 'remain'/\**ostat*' (transitive)

Even when such verbs *do* have reflexive morphology, as in the case of Russian *naxodit'sja* 'be found', Italian *trovarsi* 'be found', and French *se trouver* 'be found', the interpretation of the verb makes it clear that it is not plausibly related to the transitive form, if one exists, by a process of "decausativization." And in many instances there is no related transitive form, again setting these verbs apart from the verbs like *break*. In general, then, there appears to be no general systematic morphological pattern associated with verbs of existence and appearance that would suggest that they are related to a more basic transitive causative form.

Next, consider the adverbial modifier *by itself*, which is claimed to bring out the presence of the cause argument that would be expected if the causative analysis were appropriate. As discussed in section 3.1, Chierchia suggests that the Italian phrase *da sé* 'by itself' (in the sense of 'without outside help') is such an adverbial. Although this adverbial can be found with verbs of change of state, it is striking that the English counterpart of the Italian adverbial cannot appear with verbs of existence and appearance, and, where it does appear, it receives a completely different interpretation: 'alone'.

- (105) a. Cassie appeared by herself. ('alone', not 'without outside help')  
 b. My mom lived by herself. ('alone', not 'without outside help')  
 c. \*The solution existed by itself.

Once again verbs of existence and appearance behave differently from verbs of change of state, which permit the 'without outside help' interpretation of the adverbial. Thus, this adverbial does not provide evidence for

positing a cause argument for verbs of existence and appearance. The unambiguous 'alone' interpretation of the adverbial would not be surprising if these verbs simply had no cause argument.<sup>21</sup>

In summary, the arguments in favor of a causative lexical semantic representation for the alternating unaccusative verbs do not hold up for the verbs of existence and appearance. These verbs do not participate in the causative alternation, as the examples in (99)–(102) demonstrate, nor do they show other evidence of a causative analysis. In light of our analysis of the causative alternation in section 3.2, we propose that this behavior reflects the absence of an external cause in the lexical semantic representation of these verbs. However, unlike internally caused verbs such as *laugh* and *cry*, which also lack an external cause, these verbs are among the prototypical unaccusative verbs of many languages, as we show in chapter 4. In English, for example, these verbs cannot assign accusative Case, and in Italian they typically select the auxiliary *essere* 'be', the auxiliary found with unaccusative verbs. Furthermore, these properties suggest that these verbs are not internally caused verbs either, since then they would most likely be classified as unergative by the linking rules. Rather, we propose that these verbs belong to a class of verbs for which the notions of external and internal causation are apparently not relevant. Given this characterization, the unaccusativity of these verbs must have a different source from the unaccusativity of those externally caused verbs such as *break*, which undergo a process of detransitivization. We formulate a linking rule to handle this in chapter 4. In chapter 6, where we discuss verbs of existence and appearance in greater detail, we show that this class of verbs is distinguished from the externally caused verbs of change of state in a variety of ways.

### 3.3.3 Verbs of Spatial Configuration

Hoekstra and Mulder (1990) include verbs such as *sit*, *stand*, and *lie* in the class of verbs of existence. Although this treatment appears to be well motivated, these verbs show some properties that at first glance are rather unexpected if this classification is correct.

Before we can offer a fuller treatment of the verbs of spatial configuration, we need to set out the range of meanings associated with them in English and other languages. What is distinctive about verbs such as *sit*, *stand*, and *lie* is that each is associated with a specific spatial configuration. Languages associate up to three types of noncausative meanings and one type of causative meaning with a particular spatial configuration.