

*The syntax and semantics of causative verbs**

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Abstract

In this paper I present a Word Grammar analysis of the syntax and semantics of the causative/inchoative alternation.¹ The analysis makes crucial use of the relational network that characterises Word Grammar which provides for the description and explanation of the behaviour of regularly alternating verbs like *BREAK* as well as exceptionally non-alternating verbs such as *VANISH* and *CUT*. I also address the difference between inherently causative alternating verbs such as *COLLECT* and inherently inchoative alternating verbs such as *GROW*.

1 Introduction: the causative/inchoative alternation

1.1 The causative/inchoative alternation.

In this paper, I concern myself primarily with the causative/inchoative alternation, exemplified in (1):

- (1) a. The boys broke the window.
b. The window broke.

I present an analysis framed in terms of Word Grammar (WG) (see for example Hudson 1990, 1995, 1998, Hudson and Holmes 1999) . The analysis will be assessed according

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¹Throughout this paper I use the term INCHOATIVE in the sense used by Levin (1993). It is debatable whether the term is suitable, since it is more traditionally used in a different sense. A more proper characterisation of the semantic properties of the intransitive pole of the alternation might be INTERNALLY CAUSED. I discuss this issue in greater detail elsewhere.

to how well it accounts for various data, which I outline here.

BREAK can be used with causative and inchoative semantics. Both these semantic patterns can be characterised by a number of diagnostic features. Causative verbs (verb uses) can appear in middle constructions (2a). They also can appear with dependents referring to a lexically determined result (2b). The subject of the verb refers to the agent of the action described, the object to the affected entity (the *er* of the result).

- (2) a. Barrs bottles break easily.
b. The boys broke the bottle to bits/*out of the way.

Inchoative verbs (verb uses) can also appear with dependents referring to a lexically determined result (3a). Furthermore, in this case a result adverbial is obligatorily predicated of the verb's subject (3b), which refers to the affected. Notice that this contrasts with the behaviour of other intransitive verbs like *DRINK*, which has no lexical result, and which permits a dependent referring to a non-selected result, predicated of a non-selected direct object.

- (3) a. The bottle broke to bits/*out of the way.
b. *The window broke the room (to bits/drafty).
- (4) a. *Diana drank into a stupor/silly.
b. Diana drank the bar dry/herself silly/Frank out of a job.

1.2 Inherently inchoative alternating verbs.

In the case of *BREAK*, it appears that the causative use is primary and the inchoative secondary: a speaker who uses the inchoative may be unaware of the identity of the agent or unwilling to commit themselves to it, but an agent or causative force is nevertheless implied (unless it is negated contextually: *It broke spontaneously*). However, in some cases the inchoative use must be considered primary. For example, certain verbs of motion which all behave alike in their inchoative uses differ as to whether or not they have causative uses:

- (5) a. The barrel rolled down the steps into the cellar.
b. *The barrels rolled the cellar (full).
c. The cellarman rolled the barrel down the steps into the cellar.

- (6) a. The car glided across the road into the ditch.
b. *The car glided the driver (panicky).
c. *The driver glided the car across the road into the ditch.

Another example is *GROW* which, when used inchoatively as in (7a), does not entail outside agency. Furthermore, the inchoative use allows many more senses (7a-f) than are possible with the causative use (8a-f).²

- (7) a. The tree grew.
b. The goat grew.
c. A leaf/beard grew (on the tree/goat).
d. They grew tired.
e. My feelings of unease grew.
f. The business grew overnight.
- (8) a. I grew a tree.
b. *I grew a goat.
c. The tree/goat grew a leaf/beard.
d. *The journey grew them tired.
e. *The situation grew my feelings of unease.
f. *The new acquisitions grew the company overnight.

In order to attract such a cluster of senses, the inchoative sense of *GROW* must have independent existence in the lexicon and so cannot be considered as derived from the causative sense.

In contrast, *COLLECT* has more senses in its causative use:

- (9) a. We collected mushrooms in my hat.
b. His lectures collected large audiences.
c. I'm collecting money for the Samaritans.
d. Do you collect stamps in Japan?
e. You can collect your parcel at the Post Office.

²The examples quoted for *GROW*, for *COLLECT* and for *FREEZE* are constructed on the basis of a summary of the separate senses given in the OED (1989). They are distinguished by differences in the semantic class of the subject and object (transitive uses) and of the verb itself.

- (10) a. The mushrooms collected in my hat.
 b. Large audiences collected in his lectures.
 c. *£500 collected for the Samaritans.
 d. *Do stamps collect in Japan?
 e. *Your parcel can collect at the Post Office.

For this reason, the causative use of *COLLECT* is to be considered primary.

The case of *FREEZE* is different from those of *GROW* and *COLLECT* in that it is, apparently, possible to use all of the senses of the verb both causatively and inchoatively:

- (11) a. That winter the Thames froze solid.
 b. In the southern ocean the rigging froze.
 c. Ellen's tongue froze to the lamp post.
 d. We dug a snow hole so as not to freeze (to death) in the night.
 e. Seeing Brer Fox, Brer Rabbit froze.

- (12) a. The severe winter froze the Thames solid.
 b. The night air froze the shirt on my back.
 c. Scott's ship was frozen into the ice.
 d. The severe weather conditions almost froze the hikers (to death).
 e. The Inland Revenue froze their accounts.

However, what is suggestive about the OED entries for these senses of *FREEZE* is that the earliest example given for the causative use is, in each case, between one and two hundred years later than that for the inchoative use. This pattern suggests a productive mechanism that maps inchoative onto causative senses.

I hope to have established, in discussing these three verbs, that a proper account of the causative/inchoative alternation must make it possible for either (or both) of the uses to have independent lexical representation and that, whatever the derivational relationship between the two senses, it must operate in both directions. I return to these verbs below, where their structures are discussed in greater depth.

Though I have framed the argument in this section in terms of basic and derived representations, this concept is actually not significant in the WG analysis, since the two uses are related by a lexical relationship and not by a derivational procedure. The purpose of the examples above is to establish two things: that the lexical relationship must be able to operate in both directions, since there are uses on either side of the alternation that depend for specifics of their meaning on a corresponding use on the other side; and that

both causative and inchoative uses must be associated with independent lexical representations, since there are cases where both sides of the alternation have idiosyncratic semantic properties.

1.3 Exceptions.

A further problem for any analysis framed in terms of lexical semantic structures is represented by those exceptional verbs, be they causative or inchoative, that do not participate in the alternation. Given that *VANISH* has an inchoative use, just like *ROLL* or *GROW* (13a,b), it must be explained why, unlike them, it doesn't also have a causative use (13c).

- (13) a. The violin vanished off the table/*unsaleable.
b. *The violin vanished the string quartet bereft.
c. *The varlet vanished the violin.

Similarly, given that *CRUSH* has a causative use, just like *BREAK* (14a,b) (in fact crushing is a kind of breaking, so the two senses must be very closely related), it must be explained why, unlike *BREAK*, it doesn't also have an inchoative use (14c).

- (14) a. Cream crackers crush crisply.
b. The criminals crushed the crackers to powder/*inedible.
c. *The crackers crushed.

I return to these examples below, as well as to some other special cases like that of matching pairs of causative and inchoative verbs (such as *KILL* and *DIE*) and that of causative verbs involving an instrument (such as *CUT*) which also follow the pattern in (14):

- (15) a. Coopers cakes cut cleanly.
b. The kids cut the cake in half/open/*ready/*fair.
c. *The cake cut.

In this section, I have outlined the data that is relevant to any account of the causative/inchoative alternation. The account must provide a satisfactory answer to the following questions:

- A. How can *BREAK*, and the other alternating verbs, be used in both causative and inchoative constructions?
- B. What is the difference between the apparently inherently causative alternating verbs, like *COLLECT*, and the apparently inherently inchoative alternating verbs, like *GROW*?
- C. Why does the mechanism responsible for A not also apply to the non-alternating causative and inchoative verbs like *CRUSH*, *CUT*, *KILL*, *DIE* and *VANISH*?

I shall argue that a satisfactory answer to these questions is only possible using a relational network model of grammatical structure like that provided by WG.

2 A Word Grammar analysis.

2.1 The WG framework: a relational network.

In WG, linguistic (and other) information is represented in relational networks and not in predicate-argument structures (as in eg Jackendoff 1990). Compare the predicate-argument structure for *KILL* in (16) with the relational structure shown in figure 1:³

(16) *KILL*: [CAUSE (x, [BECOME (y, [DEAD])])]

³The diagrams that I use in the WG analysis are essentially the same as those found in Hudson (1995, 1998). They represent a network of concepts related by pairwise relationships. The relationships are of two kinds: isa is a classifying relationship, shown by a triangle whose base rests on the supercategory and which is connected by a line to the subcategory; all other relationships are dependencies, shown by labelled arrows pointing from the parent to the dependent. All salient features of the diagrams are described in prose in the surrounding text.

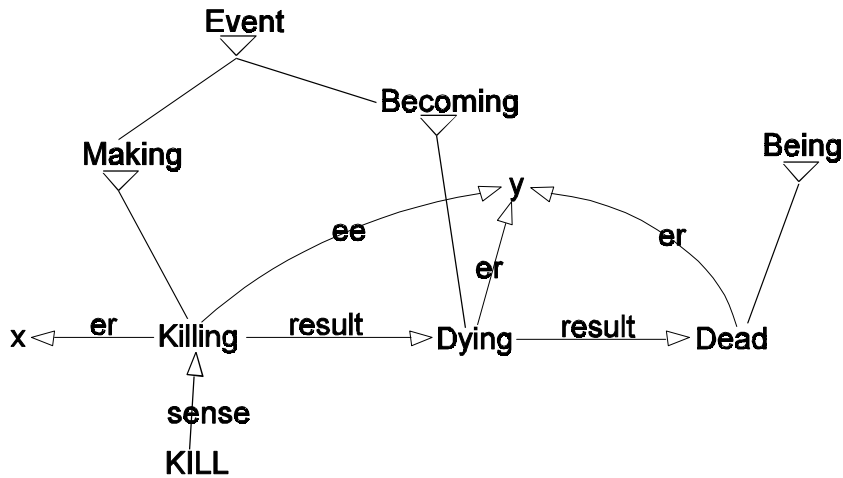


Figure 1 Lexical semantic structure of Killing, the sense of *KILL*.

The predicate-argument structure contains three predicates, CAUSE, BECOME and DEAD, and two other elements, *x* and *y*, the arguments of the predicates. The predicates are of two kinds: the first two are Events, the third a State (this forms part of the definition of CAUSE, BECOME and DEAD); and their arguments are of another kind: Entities. The relationships between the different elements are defined by their positions in the structure: *x* is an Agent, by virtue of being the first argument of CAUSE, *y* a Theme, by virtue of being the first argument of BECOME, and so on. In predicate-argument structure the categories of the elements are basic and the relationships between them are read off the structure.

In the relational structure the opposite is the case: the relationships are basic and they define the categories of the elements. The elements themselves are not differentiated except by the relationships they participate in: Dying is Dying because its result is Dead, and it is an example of Becoming because it has one other argument (the *er*) besides its result; similarly, Killing is Killing because its result is Dying and it is an example of Making because it has two arguments (*er* and *ee*) besides the result.

The difference between the two structures has a number of consequences, two of which are, briefly, discussed here. Perhaps trivially the relational structure permits us to show that the affected of Killing, the *er* of Dying and that of Dead are the same entity (this can be achieved in the predicate-argument structure by co-indexing). More significantly, though, since the elements are defined by their relationships, they can be defined in more

than one way. For example, Electrocuting is an example of Killing, but also of Electrifying, which defines the manner (see figure 2).

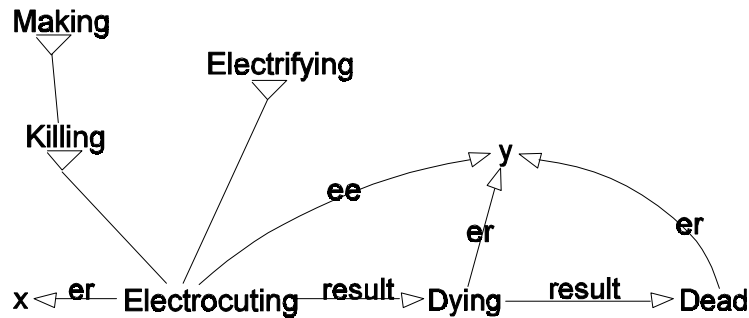


Figure 2 LSS of Electrocuting.

Figure 2 shows that Electrocuting is a kind of Killing, from which it inherits its causal structure. Also that it is a kind of Electrifying, from which it inherits other properties of that concept: the application of electricity to the ee by the er etc. This information can only be integrated into the predicate argument structure by introducing a further predicate into the structure (17), which obscures the relationship between the act of Killing and that of Electrifying.

(17) ELECTROCUTE: [CAUSE (x, [BECOME (y, [DEAD])], BY [ELECTRIFY (x, y)])]

WG syntactic structures are also relational. They differ from semantic structures only in as much as the relationships are syntactic rather than semantic. The classes of the elements are also different, being defined by different relationships. Figure 3 gives a partial structure for *Kathleen killed the kangaroo*, showing semantic as well as syntactic structure.

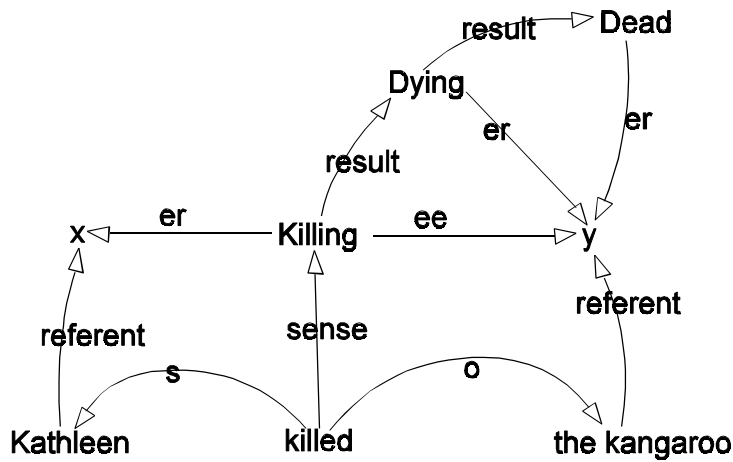


Figure 3 Partial grammatical structure of *Kathleen killed the kangaroo*.

For simplicity's sake, I am ignoring the relationship between *the* and *kangaroo*. In a full analysis, the determiner is the object of the verb and the noun the complement of the determiner. The determiner and its complement share the same referent, so for the purposes of the linking rule in figure 4 and (18) they can be treated as a unit.

Linking between semantic and syntactic structures is mediated by the sense and referent relationships. Sense is a lexical relationship: the lexeme *KILL*, of which *killed* is an example, has the sense *Killing*, which helps to determine the semantic structure of utterances containing examples of the lexeme. The referent relationship is determined partly by the context: *y*, the referent of *kangaroo*, is an example of its sense, further properties (definiteness, deadness etc) being supplied by the linguistic context, or by other kinds of context as in the case of identification of the referent. These two relationships provide the mechanism for argument linking in WG. The single linking generalisation is shown in figure 4, which is summarised in prose in (18) (Hudson 1990: 132):

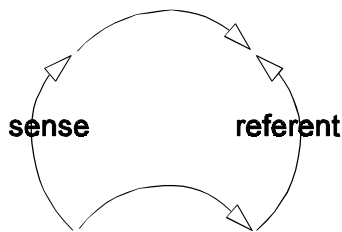


Figure 4 Linking.

(18) A word's dependent refers to a dependent of the word's sense.

It may be that specific instances of figure 4 can be used to pair semantic and syntactic links (er to subject, ee to object etc) and so to state linking regularities as they become desirable, though that possibility is not explored here. As well as the sense relationship, a word's lexical entry contains information about any expected syntactic dependents (valents), specifying their kind (subject, object etc) and other properties (word class etc) as well as the semantic role played by their referents. Figure 5 shows part of the lexical structure of *KILL*, which has a subject whose referent is the er of the sense and an object whose referent is the ee of the sense.

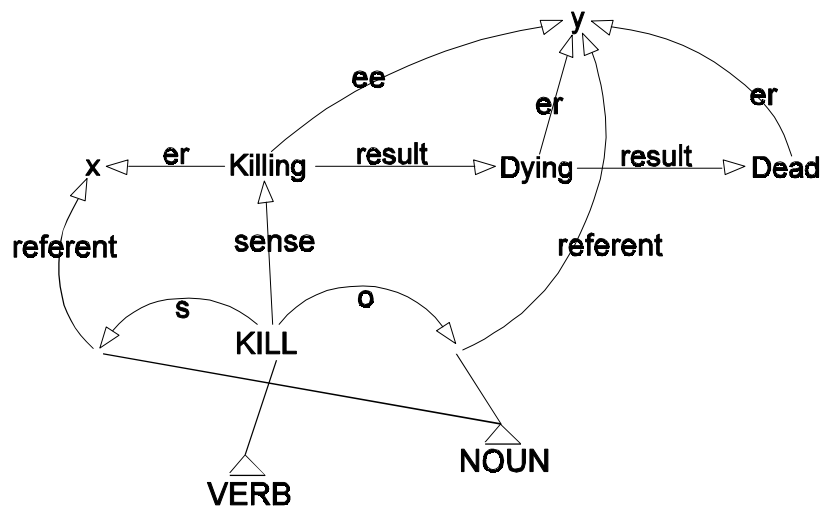


Figure 5 Partial lexical structure of *KILL*.

Generalisations can be made in WG by the use of the isa relationship. This relationship classifies all the elements of linguistic structure and allows the lower categories to inherit (as a default) the properties of higher categories. For example, since all verbs can take a subject, *KILL* can inherit this property from the word class *VERB*, of which it is a member:

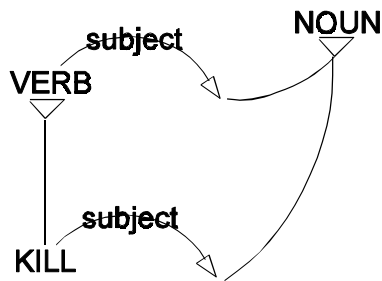


Figure 6 The subject relationship.

This means that the subject need not be part of the lexical structure of individual lexemes. However, it is not the case that just because subjects can be represented at a general level they necessarily must be. Furthermore, in the case of subjects, it might be argued that they do need to be represented at the level of the individual lexeme because of idiosyncrasies in the semantic arguments they express. This depends on the expression of linking regularities: can we produce a generalisation over subject linking that will account for all the variability of the data?

One important consequence of using network structures is that they do not require, or permit, a distinction between lexicon and grammar: grammatical regularities are simply generalisations over lexical entries (like the one shown in figure 5), and the combinatorial properties of lexical items are determined by the relationships (isa and other) that link them into the network of linguistic information. In this way, the WG paradigm does not encourage us to follow the Bloomfield-inspired programme underlying the analyses of both Levin (1993, Rappaport and Levin 1988) and Jackendoff (1990), that seeks to minimise lexical representations. On the contrary, thanks to inheritance a lexical entry contains all the information necessary to integrate it with its linguistic (syntactic) and conceptual context.

The isa hierarchy does encourage the extraction of generalities: as soon as two independent properties correlate, they define a class of elements having those properties. However, this does not force us to remove the properties from the structures of the individual elements. I showed above that the presence of a subject was characteristic of the class of verbs. However, the subject still must appear in the lexical structures of individual verbs that exercise particular (semantic or other) control over their subjects. As we shall see below, this is a great advantage of the network model, that a property may be easily represented at more than one level of structure, with differing degrees of specificity.

4.2 The causative/inchoative alternation.

I now turn to the details of the analysis within this framework of the causative/inchoative alternation. Figure 7 shows the lexical structure of *Breaking*, which is similar to that of *Killing*.

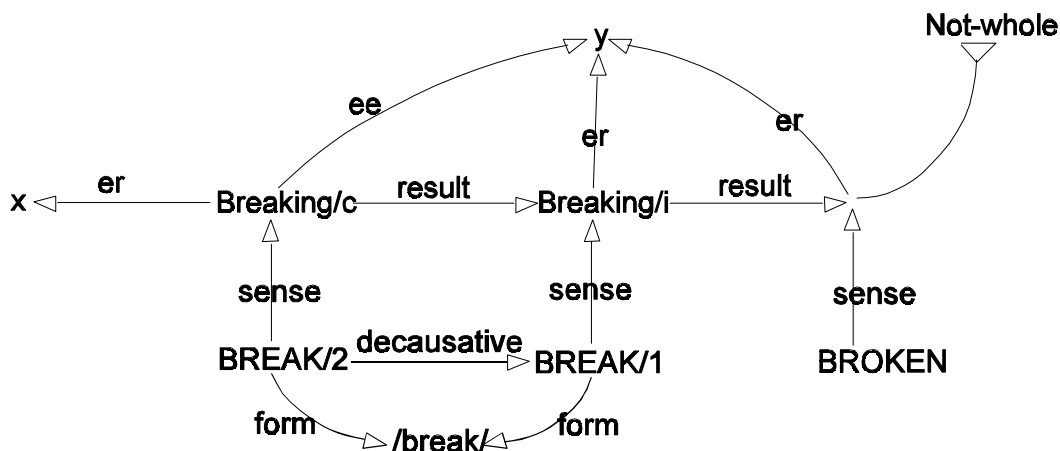


Figure 7 Lexical structure associated with *Breaking*.

This structure includes two events, *Breaking/c* and its result *Breaking/i*, which correspond to the causative and inchoative uses of the verb. These are respectively the senses of (transitive) *BREAK/2* and (intransitive) *BREAK/1*. The WG semantic structure is like Jackendoff's LCS (lexical conceptual structure), in that it contains both causative and inchoative semantics. It also contains a similar specification of the result state: the result of *Breaking/i*, which also is the sense of the adjective *BROKEN*, is a Not-whole.

The lexical structure contains the information that verbs of the form */break/* can be used in inchoative as well as causative constructions. However, while the causative and inchoative verbs share the same form (spelling, pronunciation, morphological properties etc), they do not share the same lexeme. Syntactic valency is a property of lexemes and, since the valencies of the two *BREAKs* are different, they must represent different lexemes.

As well as making clear the relationship that holds between the two senses (one is the result of the other) figure 7 also shows a direct (lexical) relationship between the two lexemes: *decausative*. The lexical relationship permits us to state generalisations over pairs of causative and inchoative lexemes. Figure 8 defines a class of causative verbs which are associated with particular semantic features and have *decausatives* that share

their form. *BREAK* and *OPEN* are members of this class and thus can inherit the decausative relationship.

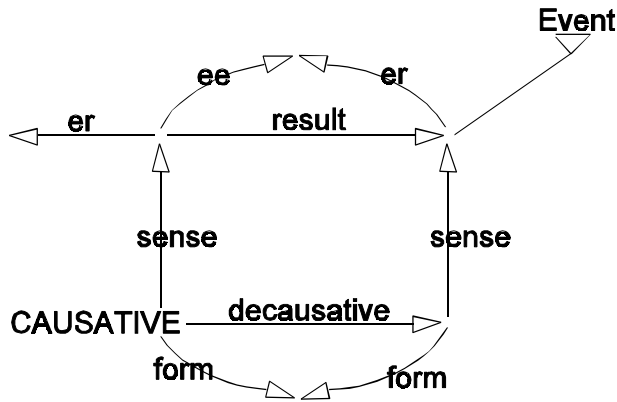


Figure 8 The decausative relationship.

So far I have shown how the WG framework accounts for the behaviour of *BREAK* and other alternating causative verbs. I now turn to the problems identified in §1: namely those alternating verbs like *GROW* and *ROLL* that appeared to be basically inchoative; the non-alternating inchoative verbs like *VANISH*; and the apparently non-alternating causative verbs like *CUT*. I hope to show that the properties of the network structure allow a natural account of these issues.

4.3 Inherently inchoative alternating verbs.

In §1 I argued that there were reasons for treating certain alternating verbs as inherently inchoative: that for these verbs the inchoative use was more basic. These reasons are of two types: implicit arguments and clusters of senses.

The reasoning from implicit arguments was introduced above: using *BREAK* inchoatively profiles an event of Becoming which implies an agent and a further causing event (Making). Inchoative *GROW* does not entail a causing event or agent in this way, as evidenced by the unnaturalness of (19b) when compared to (19a).

- (19) a. -The window broke. -Who broke it?
 b. -The nettles grew. -Who grew them?

In the case of causative and inchoative *BREAK*, as I argued above, the two uses PROFILE (in the sense of Langacker 1990) different parts of the same schema, just as the different

words relating to commercial transactions (*BUY, SELL, COST, AFFORD, PRICE, REDUCTION* etc) profile different parts of the relevant schema. The schema, in these examples, corresponds to a FRAME, in the sense of Fillmore (1985, Fillmore and Atkins 1992): ‘a structured background of experience, beliefs or practices ‘against which a word’s meaning is understood (ibid:77). However, in the case of *GROW*, the two uses relate to different schemas. The framework for vegetative growth does not contain a ‘gardener’ role, though it does support a lexical extension to a further schema for horticultural growing. For this analysis to work, inchoative *GROW* must have an independent lexical representation that includes the vegetative growth schema and provides the basis for the extension to causative Growing. The relevant semantic structure is explored below.

The reasoning from clusters of senses also seeks to show that the inchoative use (as well as the causative use) must have independent lexical representation. The argument depends on the notion that most words have a network of closely related senses. For example, *BREAK* is used in cases of a failure of material integrity (20) and of intended function (21).

(20) My glass broke.

(21) My watch broke.

Not all the uses of an alternating verb have both causative and inchoative senses:

(22) Fatima broke the doughnut-eating record.

(23) *The doughnut-eating record broke.

If the inchoative lexeme is considered to be derived from the causative one, it is to be expected that the causative will be associated with more related senses. However, this is not always the case. For example, I showed above that *GROW* can be used intransitively to describe the coming into being or increasing in size or significance of plants, animals or their parts, inanimate objects and abstract concepts. In contrast, transitive (causative) *GROW* applies only to plants, or the parts of plants and animals:

- (7) a. The tree grew.
 b. The goat grew.
 c. A leaf/beard grew (on the tree/goat).
 d. They grew tired.
 e. My feelings of unease grew.

- f. The business grew overnight.
- (8)
- a. I grew a tree.
 - b. *I grew a goat.
 - c. The tree/goat grew a leaf/beard.
 - d. *The journey grew them tired.
 - e. *The situation grew my feelings of unease.
 - f. *The new acquisitions grew the company overnight.

Certain verbs of manner of motion provide similar evidence. *ROLL* can be used both intransitively and transitively to describe internally and externally caused rolling motion. However, some intransitive verbs (eg *GLIDE*, *DRIFT*), that behave otherwise exactly like intransitive *ROLL*, cannot be used transitively, since the manner of motion they denote is not subject to external control (Levin 1993: 265):

- (5)
- a. The barrel rolled down the steps into the cellar.
 - b. *The barrels rolled the cellar (full).
 - c. The cellarman rolled the barrel down the steps into the cellar.
- (6)
- a. The car glided across the road into the ditch.
 - b. *The car glided the driver (panicky).
 - c. *The driver glided the car across the road into the ditch.

These considerations point to the need for a means of deriving causative from inchoative verbs in the manner of figure 8. This can be simply represented in WG by means of a further lexical relationship, causative. Figure 9 defines a class of inchoative verbs which are associated with particular semantic features and have causatives that share their form.

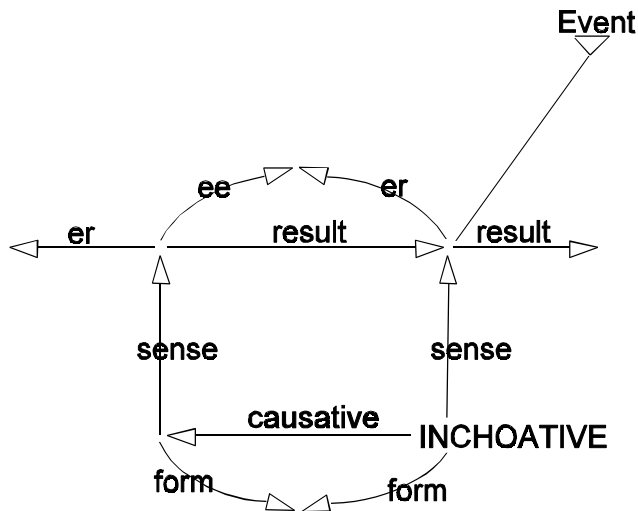


Figure 9 The causative relationship.

The causative relationship does not replace the decausative. Many other alternating verbs, like *COLLECT*, have more causative than inchoative uses:

- (9) a. We collected mushrooms in my hat.
 b. His lectures collected large audiences.
 c. I'm collecting money for the Samaritans.
 d. Do you collect stamps in Japan?
 e. You can collect your parcel at the Post Office.
- (10) a. The mushrooms collected in my hat.
 b. Large audiences collected in his lectures.
 c. *£500 collected for the Samaritans.
 d. *Do stamps collect in Japan?
 e. *Your parcel can collect at the Post Office.

Nor is it a question of applying only one of these relationships to each alternating pair. The relational network will not permit this: the decausative of a causative verb is an inchoative verb and so, by figure 9, has a causative and vice-versa. In any case, it is not desirable to limit any particular alternating pair to one of these lexical relationships. In the case of *BREAK*, there are many uses, both causative and inchoative, that do not participate in the alternation. The extensions in meaning associated with each of the uses

of *BREAK* must be lexical, since they are specific to *BREAK*. So the two uses must each have an independent lexical representation to support them. Figure 10 shows the relationship between the classes of causative and inchoative verbs and the two relationships causative and decausative.

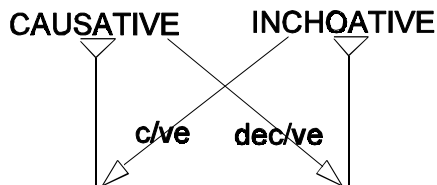


Figure 10 CAUSATIVE and INCHOATIVE.

The relational network makes it possible to show the difference between the *GROW* verbs and the *COLLECT* verbs. There follows a (partial) semantic analysis of these verbs, according to the classification of senses identified in (7-10), showing which parts of the structure participate in the causative/inchoative alternation. The analysis is constructed on the basis of the examples, separate senses being introduced where necessary to account for differences in the class of any arguments, in the relational structures associated with the arguments and in the ability to appear in causative or inchoative constructions. The details of the analyses are open to revision, though they are sufficiently robust to serve as an illustration of my point.

The primary sense of *GROW* is shown in figure 11.

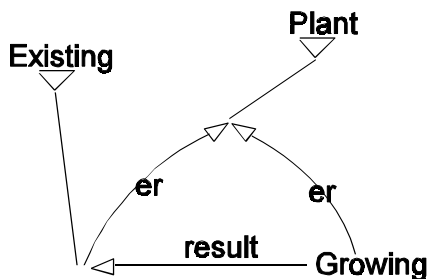


Figure 11 Growing.

Growing is the sense of the verb in (7a). Its *er* isa *Plant* and its *result* isa *Existing*: it describes plants coming into existence vegetatively under their own steam ((8a) is actually ambiguous between the senses *Growing*, *Growing/hort* and *Growing/bigger*, which last

two we shall meet below). There are additionally (at least) four immediate sub-cases of Growing as well as a number of related senses, which are used in the other examples.

First of these is a special kind of Growing that takes place in a horticultural setting, under the supervision of a (typically human) gardener.

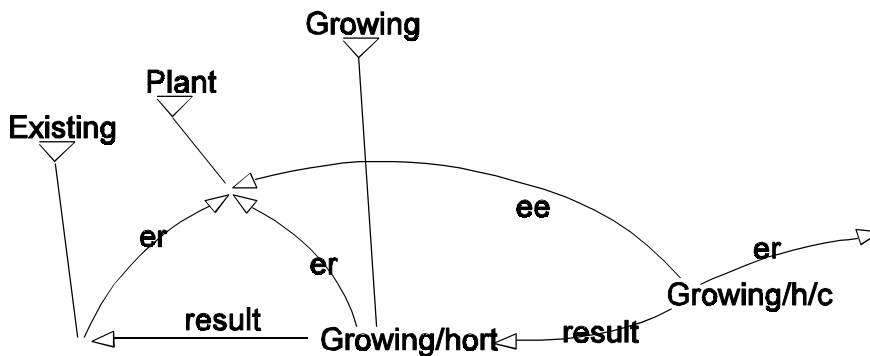


Figure 12 Growing/hort.

The sense Growing/hort appears in figure 12. It is an example of Growing. As with Growing, its result isa Existing and its er isa Plant. Unlike Growing, it has a causative, Growing/h/c (8a).

Next, *GROW* can refer to the coming into existence of parts of plants or animals.

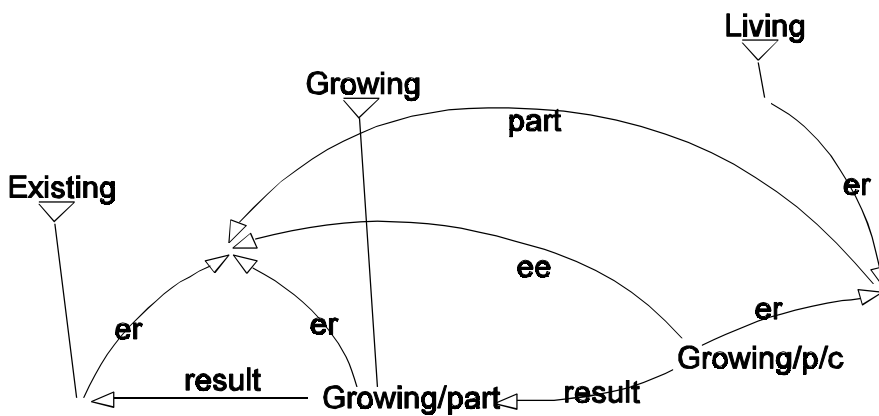


Figure 13 Growing/part.

Growing/part is the sense of the verb in (7c). Again, it is an example of Growing and again its result isa Existing. However, its er must be a part of a plant or animal (the er of

Living). Like Growing/hort it has a causative, Growing/p/c, the sense of the verb in (8c), whose er in this case is the same entity whose part is the argument of the inchoative sense.

The next sense, Growing/bigger (figure 14), does not select a particular class of argument (7a,b,e,f). Because of the semantics of Big, a scalar value, this sense is not telic (it permits adverbials of duration: *Peach trees grow for only 3 months, during the summer*).

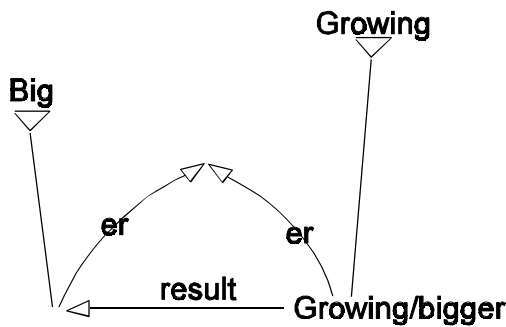


Figure 14 Growing/bigger.

Growing/bigger isa Growing, but exceptionally its result isa Big. This sense has no causative (8b,e,f). It does have a subsense, Growing/p/b, which also isa Growing/part. This appears in figure 15 and is the sense of the verb in sentences like *Your hair grows for six months after your death*.

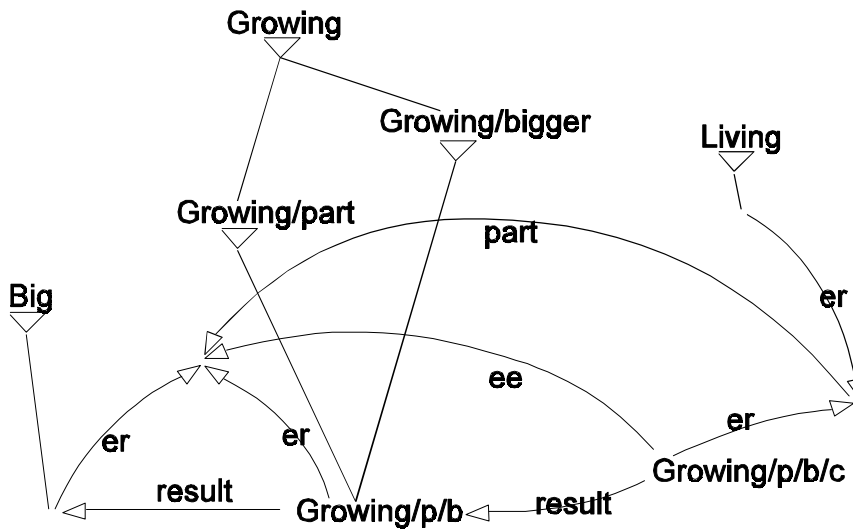


Figure 15 Growing/p/b.

This sense shares with Growing/bigger the fact that the result is a Big. However, it shares with Growing/part the fact that the er must be a part of a living thing, as well as the presence of a causative, Growing/p/b/c (*And is growing his hair*).

Finally, *GROW* is used to refer to a gradual change of state (7d). Figure 16 shows Growing/becoming which supports this use of the verb. It does not select the class of its er. Its result is a state (isa Being), which must be further specified by the (linguistic) context. The manner (By-degree) gives the meaning of a gradual change. There is no causative use (8d).

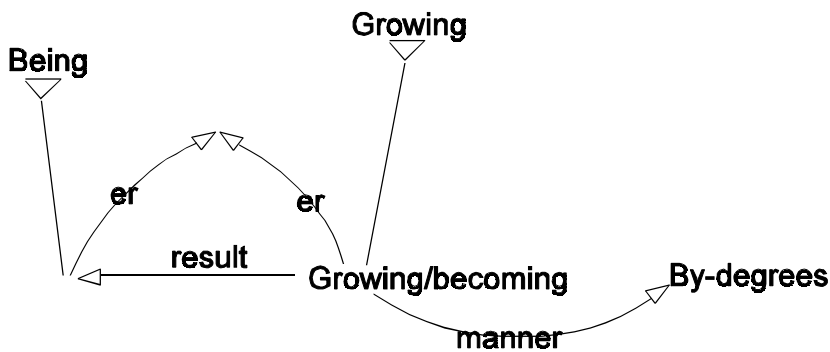


Figure 16 Growing/becoming.

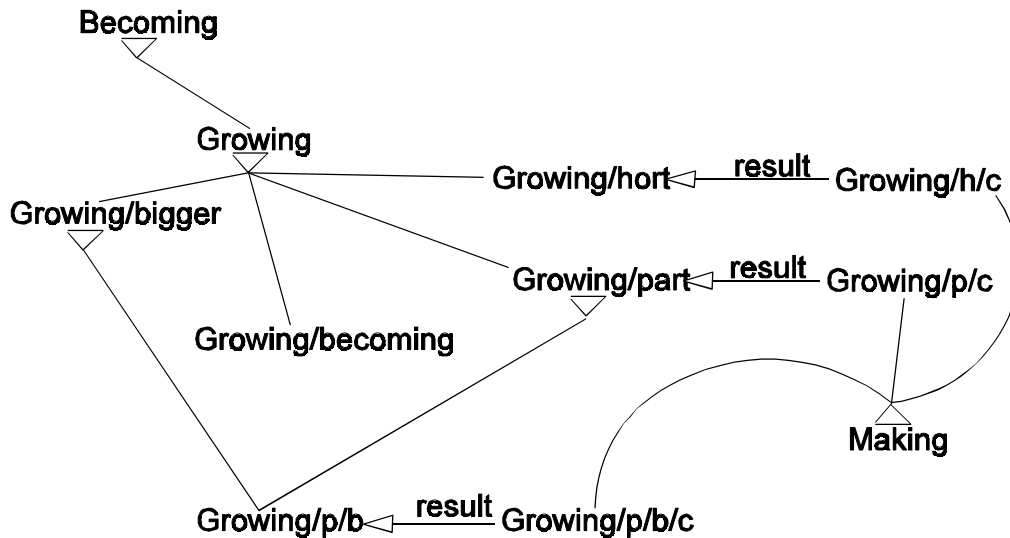


Figure 17 Conceptual structure surrounding Growing.

Figure 17 summarises the discussion of the conceptual structure that surrounds Growing and shows that the alternating senses of *GROW* are secondary to the non-alternating sense: come into existence (as applied to vegetables). The extension of meaning from this basic sense to the causative uses, therefore, must proceed through the inchoative senses. The case of *COLLECT*, however, shows the opposite pattern.

The primary use of *COLLECT* is shown in figure 18.

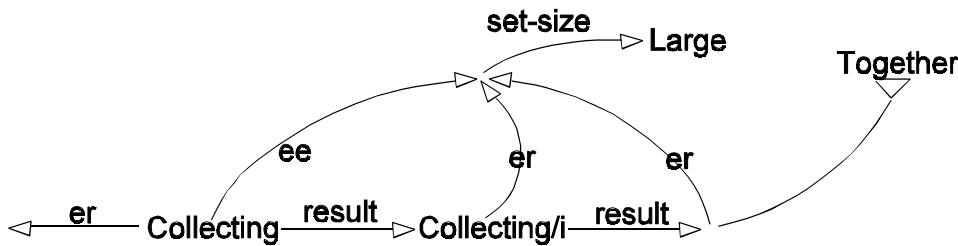


Figure 18 Collecting.

Collecting is the sense of the verb in (9a). It has an er (typically human) an ee and a result. The result, Collecting/i, is the sense of the verb in (10a) and its result is a state: that its er (the ee of Collecting) be gathered together. This argument is given the set-size Large. This relationship carries the meaning that collecting, in this use, involves the bringing together of large numbers (or amounts) of some class of items (or some substance).

Collecting/people (figure 19), represents a sub-case of Collecting, where the er of the result is further specified as being of the class of people. This is the sense of the verb in (9b) and it has a decausative, Collecting/p/i (10b).

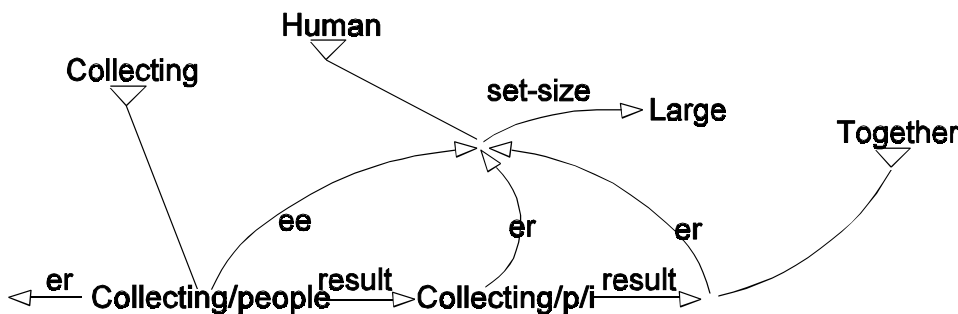


Figure 19 Collecting/people.

The remaining uses of the verb are distinguished by the fact that the result, in these cases, is that the collector possesses the thing collected (possibly in large amounts). These are

shown in figure 20. Collecting/having is the sense of the verb in (9c,d). Like Collecting, it specifies the set-size of the ee (Large). Unlike Collecting, though, it has no decausative (10b). Its result is a Having which shares both er and ee with the cause. Collecting/getting is a special case of Collecting/having and is the sense of the verb in (9e). It does not necessarily involve gathering things in large number (or amount). Again, there is no decausative (10e).

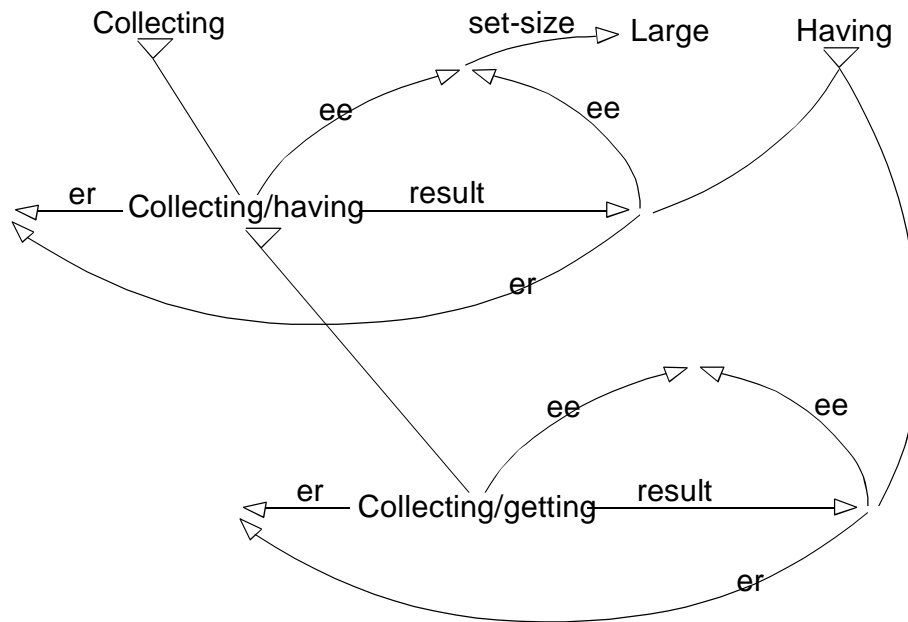


Figure 20 Collecting/having and Collecting/getting.

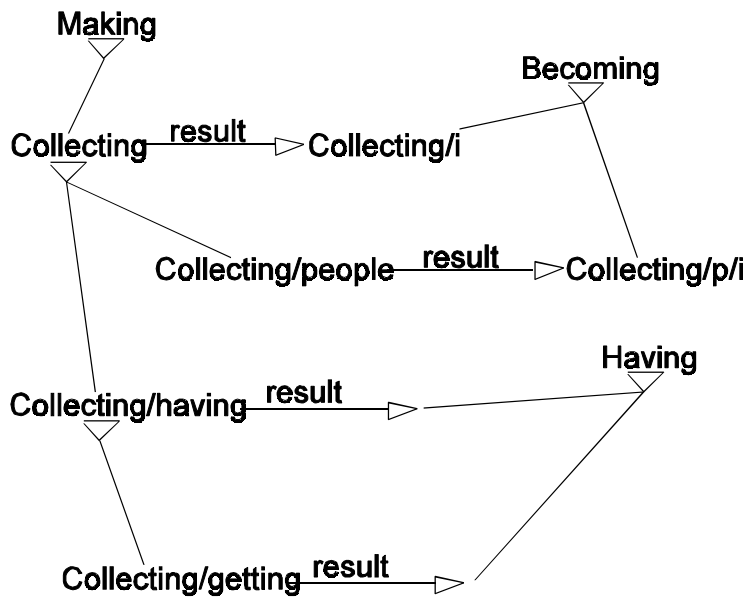


Figure 21 Conceptual structure surrounding *Collecting*.

Figure 21 summarises the discussion of the conceptual structure surrounding *Collecting* and shows that the non-alternating senses of *COLLECT* are secondary to the alternating sense. The extension of meaning in this case must proceed through the causative senses. Notice that the extended transitive sense are not causative in the sense in which I am using it (see figure 8), since *Having* is a state rather than an event. It is for this reason that they do not participate in the alternation. The argument that extension of meaning in *COLLECT* extends from the causative to the inchoative senses, taken alongside the above conclusion that the extension of meaning found in the case of *GROW* proceeds through the inchoative senses, supports the contention that both the causative and the decausative must be recognised as lexical relationships.

4.4 Exceptions.

What of the non-alternating inchoative verbs like *VANISH*? Figure 22 shows the LSS of *VANISH*.

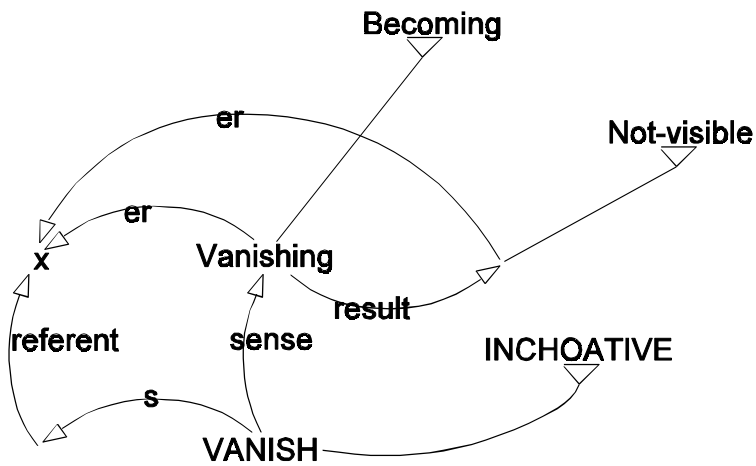


Figure 22 Partial lexical structure of *VANISH*.

Clearly it is an inchoative verb by the definition in figure 9: its sense has a result state with which it shares its other dependent. Yet it does not have a causative. Network structure allows us to show all this information quite simply. As an inchoative verb, *VANISH* inherits all the properties associated with inchoative verbs (argument linking etc), but exceptionally it does not inherit the causative relationship.

KILL and *DIE* constitute further exceptions to the patterns in 8 and 9. Figure 23 shows that they have a decausative and a causative respectively. However, exceptionally, they do not share a form.

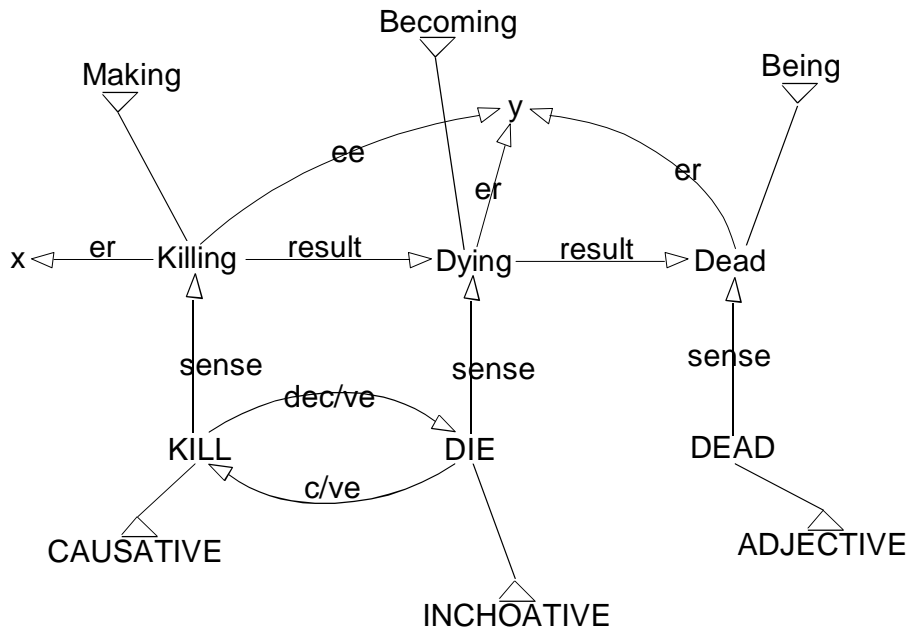


Figure 23 Partial lexical structure of *KILL* and *DIE*.

DIE is the decausative of *KILL* and *KILL* the causative of *DIE*.

Finally I turn to the case of *CUT*. We saw in (15) that this causative verb apparently does not conform to the pattern in figure 8.

- (15) a. Coopers cakes cut cleanly.
 b. The kids cut the cake in half/open/*ready/*fair.
 c. *The cake cut

However, the relational network allows a full decomposition of the semantic structure associated with *CUT* and demonstrates that it does indeed conform to the pattern of figure 8, if in an exceptional way.

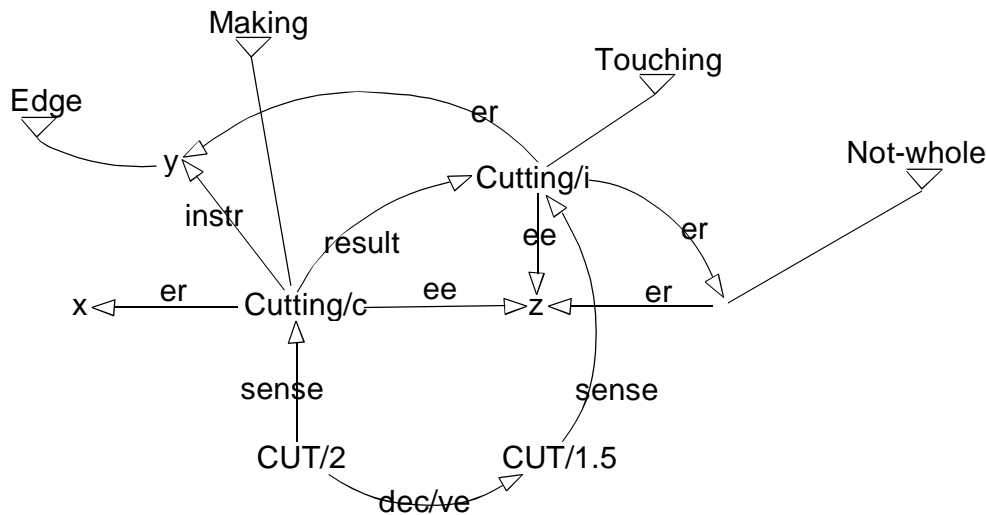


Figure 24 Partial lexical structure of *CUT*.

Figure 24 shows that the result of *Cutting/c* is an example of *Touching* (Levin argues from the participation of *CUT* in the conative alternation *-cut at-* that it necessarily involves contact). The first argument of this result is not the same as the *er* of the final result state (the thing cut), but is the instrument. In fact, *Cutting/i* (the result of *Cutting/c*) can be used as the sense of *CUT*, in examples like (24) where the subject refers to the instrument (the *er* of *Cutting/i*).

(24) The knife cut (the cake).

Levin (1993: 9-10) correctly identifies *CUT* as a causative verb, but argues that, since it involves an instrument and therefore necessarily an agent (who acts on the instrument), it isn't a *pure* causative verb and therefore doesn't participate in the alternation. The WG semantic structure of *CUT* demonstrates clearly how the presence of an instrument interferes with the operation of the decausative generalisation, in that it is the instrument and not the affected (*ee*) that is the first argument of the caused event (*Cutting/i*). Specifically, I am arguing that Levin is correct in claiming that *CUT* is causative and that it doesn't participate in the causative/inchoative alternation in the normal way because of the presence of an instrument in its semantic structure. However, I am arguing against Levin's claim that the agent is obligatory (see 24). Furthermore, I claim that *CUT* has a decausative, *CUT/1.5* but that, exceptionally, this is not an inchoative verb. *Cutting/i* results in a state. For this reason, *CUT/1.5* does not itself have a decausative.

5 Concluding remarks.

In the above section, I have developed an analysis for the causative/inchoative alternation using the relational network framework of WG. The relevant generalisation was made using the isa relationship and the categories *CAUSATIVE* and *INCHOATIVE*. The resulting model has the properties of both the polysemy model and the derivational model identified by Croft (1998). A number of features of the framework proved to be significant in the analysis, allowing it to steer a middle path between overgenerality and overspecificity and permitting a full and explicit decomposition of word meaning.

The mechanism controlling the alternation is structural rather than derivational. This means that all uses have independent lexical representations, so that exceptional cases like *CUT* can be covered by the same mechanism. The network structure provides for a full description of the features of the exceptional, as well as the central, cases.

Returning to the questions introduced in §1 (A-C), we can see how these features provide meaningful answers (D-F).

- A. How can *BREAK*, and the other alternating verbs, be used in both causative and inchoative constructions?
- B. What is the difference between the apparently inherently causative alternating verbs, like *COLLECT*, and the apparently inherently inchoative alternating verbs, like *GROW*?
- C. Why does the mechanism responsible for A not also apply to the non-alternating causative and inchoative verbs like *CRUSH*, *CUT*, *KILL*, *DIE* and *VANISH*?
- D. *BREAK* and the other alternating verbs have both causative and inchoative (or decausative) lexical structures, joined by a pair of reciprocal lexical relationships.
- E. In the inherently causative verbs, extensions in meaning (use) proceed from causative to inchoative uses, by way of the decausative relationship. In the inherently inchoative verbs, extensions in meaning (use) proceed from inchoative to causative uses, by way of the causative relationship.
- F. *CRUSH* and *VANISH* represent simple exceptions in that they lack the decausative and the causative respectively. *KILL* and *DIE* are similarly exceptional in that they represent each others causative and decausative respectively. *CUT* does participate in the alternation, though its lexical semantic structure leads to a decausative with an exceptional semantic structure (*CUT*/1.5).

References.

- Bloomfield, L. (1933). *Language*. New York: Holt.
- Croft, W. (1998). Linguistic evidence and mental representations. *Cognitive Linguistics* 9(2), 151-173.
- Fillmore, C. (1985). Frames and the semantics of understanding. *Quaderni de semantica* 6, 223-253
- Fillmore, C. & S. Atkins (1992). Towards a frame-based lexicon: the semantics of RISK and its neighbours. In Lehrer and Kittay (1992), 75-102.
- Hudson, R. (1990). *English word grammar*. Oxford: Blackwell.
- Hudson, R. (1992). So-called 'double objects' and grammatical relations. *Language* 68, 251-276.
- Hudson, R. (1995). *Word meaning*. London: Routledge.
- Hudson, R. (1998). *Encyclopedia of Word Grammar*.
<http://www.phon.ucl.ac.uk/home/dick/papers>.
- Hudson, R. & J. Holmes (1999). Re-cycling in the lexicon. This volume.
- Jackendoff, R. (1990). *Semantic Structures*. Cambridge, MA: MIT Press.
- Langacker, R.W. (1990). *Concept, image and symbol. The cognitive basis of grammar*. Berlin and New York: Mouton.
- Lehrer, A. & E. Kittay (1992). *Frames, fields and contrasts. New essays in semantic and lexical organisation*. Hillsdale, NJ: Lawrence Erlbaum.
- Levin, B. (1993). *English verb classes and alternations: a preliminary investigation*. Chicago: UCP.
- OED 1989: *The Oxford English Dictionary, 2nd ed.* Oxford: Clarendon.
- Rappaport, M. & B. Levin (1988). What to do with theta-roles. In W. Wilkins (ed.) *Syntax and Semantics* 21. *Thematic relations*. New York: Academic Press.