

Split intransitivity in English

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1 Introduction

In this article, I consider the phenomenon of split intransitivity—the notion that there is a ‘split’ amongst different classes of intransitive verbs in relation to the behaviour of their arguments, with a focus on English.

The starting point of my analysis is the ‘unaccusative hypothesis’, which posits a two-way split amongst intransitive verbs. (I introduce the unaccusative hypothesis in more detail in the following subsection.) I consider (section 2) the various diagnostics of ‘unaccusativity’ that have been proposed for English, which purport to determine to which of the two classes each intransitive verb belongs, describing the classes of verbs which each diagnostic picks out. Based on this, in section 3 I present a new analysis of split intransitivity which posits multiple possible positions for intransitive arguments, and multiple classes of intransitives, and argue (subsection 3.4) that this analysis is superior to the traditional two-way analysis. My new analysis doubles as a theory of thematic roles, and I sketch how this theory can be extended to transitive clauses (subsection 3.5). In section 4, I implement the theory by presenting formal analyses to account for the diagnostics discussed in section 2. Section 5 concludes.

1.1 The unaccusative hypothesis

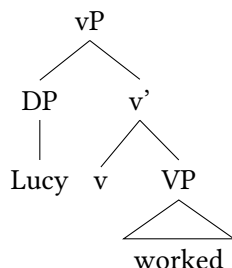
The so-called unaccusative hypothesis was first developed by Perlmutter (1978) in the framework of Relational Grammar. It was later re-expressed in terms of Government and Binding (GB) Theory by Burzio (1986) and has received a great deal of attention in the literature in relation to a wide range of languages.

The core notion of the hypothesis is that in all languages there are two classes of intransitive verb—‘unaccusatives’ and ‘unergatives’—which differ as regards the grammatical relation borne by their single argument, or in GB and minimalist terms the deep structure / first-merged position of that argument. The argument of unaccusatives is at some level like a (direct) object of a transitive verb; the argument of unergatives behaves more like an (active) transitive subject. All intransitives must be employed either as unaccusatives or unergatives; some verbs arguably alternate between the two (Rosen 1984, p. 66).

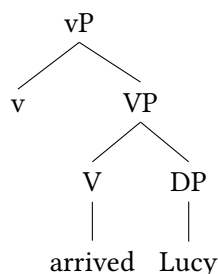
In standard minimalist terms, unaccusatives are said to have an internal argument which is merged as the complement to the lexical verb *V* (i.e. in the same position as transitive objects). Unergatives have an external argument, first-merged in the specifier position of *vP* (as are active transitive subjects). This distinction between the two classes of verbs

may be represented as follows:

(1) Unergatives:



(2) Unaccusatives:



It is widely held that the identification of an intransitive verb as either unergative or unaccusative may be determined via various language-specific unaccusativity diagnostics. In the following section, I consider those diagnostics which have been proposed for English.

2 Split intransitivity diagnostics in English

The purpose of this section, which shall form the basis for the analysis presented later on in the article, is to consider the various diagnostics of ‘unaccusativity’ proposed in the literature for English. The analysis is based primarily on a sample of around 35 verbs from a range of semantic classes, namely those discussed by Sorace (2000) in relation to their cross-linguistic auxiliary selection behaviour (see table 1), plus some additional verbs which undergo the causative alternation¹ like *burn* and *tear*. A few verbs discussed by Sorace which in English are either not strictly intransitive in the sense of having exactly one argument (e.g. *please*, *rain*²) or are phrasal in nature (e.g. *be born*, *catch on*) are not considered.

Statements of grammaticality draw from my own judgements and online surveys with around 100 native speaker respondents. A certain degree of variation seems to be present amongst speakers (more so with some forms than others); however, I have aimed to give a picture of an ‘average’ speaker’s judgements.

2.1 Two non-diagnostics: locative inversion and *there*-insertion

Various authors have associated the locative inversion and *there*-insertion constructions with unaccusativity (see Levin and Rappaport-Hovav 1995, p. 19). However, this has been

¹Also known as the ‘anticausative alternation’.

²I do not consider verbs like *rain* as strictly intransitive as they appear to lack arguments altogether.

disputed. Levin and Rappaport-Hovav (1995, ch. 6) argue that locative inversion is related to discourse function, not argument structure, and speculate that the same may be true of *there*-insertion (p. 277); Ramchand (2008, p. 78 fn. 6) also assumes *there*-insertion is not an unaccusativity diagnostic.

Speakers seem to vary widely in regard to which verbs they accept these constructions with, at least when they are presented with examples out of context. Crucially, however, they appear no less likely to accept these constructions with prototypical ‘unergatives’ than with prototypical ‘unaccusatives’: e.g. *There worked a man* is about as readily accepted as *There arrived a man*, and speakers are similarly doubtful about both *?In the room talked a man* and *?In the room died a man*. Therefore I shall follow Levin and Rappaport-Hovav (1995) and Ramchand (2008) in assuming these are not truly argument structure diagnostics, and set them aside.

2.2 Process verbs

A number of tests pick out sets of verbs in English each corresponding more-or-less to Sorace’s (2000) ‘process’ class—best defined as those intransitives which describe neither a state, a change of state or an (inherent) change of location³. This basically corresponds to most conceptions of the traditional ‘unergative’ class insofar as it is ever explicitly defined. Each of these tests does, however, pick out a slightly different group of verbs.

The diagnostics in question which I have been able to identify in the literature are: *V one’s way into* (Marantz 1992), *V away* (Keyser and Roeper 1984), the cognate object construction (Levin and Rappaport-Hovav 1995, p. 40), agentive suffix *-er* (Burzio 1981, pp. 255–8), and prefix *out-* (Keyser and Roeper 1984)⁴. These are all illustrated below with the verb *swim*, with which they can all occur:

- (3) a. *Lucy swam her way into the harbour.*
- b. *Lucy was happily swimming away, round and round the lake.*
- c. *Lucy swam a swim.*
- d. *swimmer*
- e. *Lucy outswam Chris.*

None of these constructions, on the other hand, can occur with a verb like *arrive*:

- (4) a. **Lucy arrived her way into the building.*
- b. **Lucy was arriving away.*

³The process verbs include ‘motional processes’ which usually denote a change of location but do not absolutely have to, e.g. *run*, *swim* and *walk*, while excluding verbs like *arrive* and *go* where a change of location is always implied. Compare:

- (i) *Lucy is running on the spot.*
- (ii) *Harry swam with all his might but the current was so strong he stayed exactly where he was.*
- (iii) **Lucy is going/coming/arriving on the spot.*

See also Legendre (2007b, p. 159). Verbs in the *arrive* class, but not those in the *run* class, are also inherently telic.

⁴References are not intended to be exhaustive.

- c. **Lucy arrived an arrival.*
- d. **arriver*
- e. **Lucy outarrived Chris.*

To reiterate, the overall generalisation is that these constructions are acceptable with process verbs and ruled out with other intransitives. There are a few nuances, however. Certain of the tests produce doubtful results with certain process verbs, particularly with the class Sorace (2000) calls ‘uncontrolled processes’:

- (5) a. Cognate objects: ?*Lucy trembled a tremble / skidded a skid.*
- b. ?*Lucy outtrembled/outcoughed Chris.*

With other verbs the cognate object test is restricted to certain meanings, e.g. *Lucy talked a talk* can refer to a presentation to an audience, but not to acts of talking in general. Speakers’ intuitions about the cognate object diagnostic seem in general to be much weaker than those concerning the other diagnostics, though a distinction between process verbs and others is still apparent.

The diagnostics may also sporadically pick out various verbs that do not belong to the process class. This varies between diagnostics, and in some cases there does not seem to be much of a consistent semantic basis as to which verbs are identified, for example:

- (6) a. *The musical died a death.*
- b. *early-riser, survivor*

Some groups of exceptions appear more systematic. In particular, the V *one’s way into* construction is frequently accepted with non-inherently telic verbs which undergo the causative alternation (*burn, melt* etc.):

- (7) *The butter melted its way into the cake.*

This same group of verbs tends to receive mixed or uncertain judgements with regards the *out-* construction (cf. Keyser and Roeper 1984, section 4.4), as do several members of Sorace’s ‘continuation of state’ class; however some verbs in these classes are widely accepted with this construction:

- (8) a. *Lucy outgrew her older brother.*
- b. ?*Lucy’s butter outmelted Chris’s butter.*
- (9) a. *Lucy outstayed Chris.*
- b. ?*Lucy outpersisted Chris.*

Change of state verbs seem to receive similarly mixed/uncertain judgements with regards V *away* (cf. Keyser and Roeper 1984, section 4.3):

- (10) a. ?*Lucy was freezing away outside in the snow.*
- b. ?*The weeds were growing away in the garden.*

To summarise, these tests all pick out verbs primarily of the process class, plus some other verbs with varying degrees of semantic systematicity.

2.3 Resultatives and the causative alternation

A number of intransitive verbs in English may participate in the resultative construction, denoting a change with an end-state expressed through an adjective or preposition phrase. With transitives employing this construction, the affected argument is always the O argument⁵, e.g.:

- (11) *Lucy hammered the metal flat.*

This provides a basis for the argument that resultatives are a diagnostic of the presence of an internal argument and hence of unaccusativity (see Levin and Rappaport-Hovav 1995, ch. 2).

Only change of state (not change of location) verbs allow the resultative construction:

- (12) a. *The lake froze solid.*
b. *The window broke into pieces.*

However, the construction does not seem to occur with all members of this class. A notable instance of non-occurrence is *die*⁶:

- (13) **The man died lifeless.*

Close examination of the intransitive verbs which allow the resultative construction reveals them to comprise very almost the same class as those allowing the causative alternation, i.e. those verbs which have a transitive alternant where the A argument is the external cause of the change of state:

- (14) a. *Lucy froze the ice cream.*
b. *Chris broke the window.*
c. **Curiosity died the cat.*

An analysis of the causative alternation as the addition or removal of an external argument (see Schäfer 2009, sections 3.1, 3.2 for references to both sides of this debate) also makes it a candidate diagnostic for unaccusativity (Perlmutter 1978, p. 162).

Several authors have attempted to delineate precisely the factors which determine membership of the class of verbs which allow resultatives or causative alternations (these include at least Levin and Rappaport-Hovav 1995, Reinhart 2002, Ramchand 2008, Alexiadou et al. 2006 and Schäfer 2009). These analyses generally, however, fail to adequately capture which verbs exhibit such behaviours. Combining ideas from Levin and Rappaport-Hovav (1995) and Ramchand (2008), I suggest a close-to-adequate characterisation may be as follows:

⁵Except in reference to ideas that follow directly from the unaccusative hypothesis in its traditional form, I avoid using the terms ‘external argument’ and ‘internal argument’ for reasons which will become clear in the following section (namely, because I hypothesise a greater number of possible argument positions). In discussion of (mono)transitives, I follow Dixon (1979) in referring to the ‘A argument’ corresponding to the traditional external argument / active subject, and the ‘O argument’ corresponding to the internal argument / direct object.

⁶A complication is that even those verbs which do allow the construction place restrictions on its use, e.g. **The lake froze icy* (for some speakers). But *die* never allows it, as far as I am aware.

(15) Intransitive verbs in English⁷ have causative alternants and allow the resultative construction iff:

- a. they express a change of state (and not a process, state or change of location); and,
- b. they lack an initiator.

The concept of initiation will be discussed further in section 3.

This characterisation does still fail to capture the issue of why *die* lacks a transitive alternant and does not allow the resultative construction: it is a change of state verb describing an event not typically initiated by its subject. It is possible *die* is merely a lexical exception (as a very frequent verb, it would be a prime candidate for lexically idiosyncratic behaviour). Another possibility is that *kill* acts as its (morphologically suppletive) alternant (cf. McCawley 1968, Dowty 1979, pp. 44–51), although this does not explain the absence of any resultative form.

Other verbs that do not have causative alternants or allow the resultative construction are *happen* and *become*⁸. However, neither are ordinary intransitives. *happen* may act as a raising verb, while *become* generally takes an adjectival or nominal complement:

(16) *Lucy_i happened t_i to be feeling sad.*

(17) *Lucy became wet.*

This suggests that only ‘true’ intransitives, which take a single argument and no complements, are eligible for the causative alternation and the resultative construction.

Another potential complication is posed by the so-called ‘internally-caused’ verbs: *grow*, *wilt*, *blossom*, *blush* etc. (Levin and Rappaport-Hovav 1995, pp. 90–98). These seem to vary, or produce uncertain judgements, as far as resultatives and the causative alternation are concerned (cf. McKoon and Macfarland 2000, Alexiadou et al. 2006)—though in general they are perhaps more accepting of the former:

(18) a. *The daffodils grew tall.*

b. *The rose bloomed red.*

c. *Chris blushed scarlet.*

d. *?The tulips wilted brown.*

(19) a. *Lucy grew daffodils.*

b. *?The tree bloomed flowers.*

c. **Lucy blushed Chris.*

d. *The heat wilted the tulips.*

⁷Note that languages vary as to which verbs undergo this alternation; see Tomescu (2008, p. 87). Note, however, that the verbs mentioned by Tomescu as cross-linguistically variable will be discussed below as being problematic in English.

⁸Sentences like *Lucy became wet* do superficially resemble resultatives, but are probably not—rather, they are part of the syntax of *become* itself. Whereas *The ice froze solid* entails *The ice froze*, *Lucy became wet* does not entail *Lucy became*. Note also that *become* does not take PP complements.

Arguably these verbs have initiators, the ‘internal causers’. I suggest, however, that their grammaticalised status as [+initiation] is uncertain: as far as the syntax is concerned, they are sometimes thought of as having initiators and sometimes not (the degree to which one or the other is true depends on the verb in question). This is possible on account of the conceptual distance between internal causation, which most often involves an inanimate, non-volitional argument, and prototypical initiation (neither animacy nor volition is necessary for initiation, but it is usual for these properties to co-occur). It does seem to me that if a verb like *die* or *break* (particularly in contexts like *The branch broke by itself*) lacks an initiator, then verbs like *bloom* or *blush* can (sometimes) be conceived of as lacking initiators also. This explains why they pattern with the other verbs which allow the resultative construction and the causative alternation, but only to an extent.

2.4 Change verbs and prenominal past participles

Prenominal past participles are another purported diagnostic of unaccusativity in English (Levin and Rappaport 1986, p. 654). This construction has been considered diagnostic of unaccusativity on the grounds that it picks out a subset of intransitives, and the same construction with transitive verbs is used to describe nouns which would be the O arguments (i.e. objects) of equivalent clausal constructions, for example *the destroyed city* (a city that has been destroyed, not a city that destroys). Amongst intransitives, prenominal past participles are restricted to verbs of change of state, including those which undergo the causative alternation⁹, and verbs of (inherent) change of location¹⁰:

- (20) a. *fallen leaves*
 b. *a decayed corpse*
 c. *the broken window*
 d. **the remained/trembled/swam/talked man*

Amongst the verbs which allow the construction, however, there are further restrictions. For example, *arrived* can only occur prenominally with certain modifiers, e.g. *the recently arrived recruits*. Furthermore, some verbs of change (e.g. *come*, *go*, *die*) do not seem to allow the construction at all. Overall, however, the statement that this construction is permitted with only (a subset of) change of state verbs holds up very well.

2.5 Inherently telic verbs

Split intransitivity has often been connected in various ways to telicity (for example by Zaenen 1988 and Borer 2005). Diagnostics of telicity and hence purportedly unaccusativity in English are adverbials like *for hours*, *for seconds*, *for years* etc., which only occur with atelic/‘unergative’ verbs (Schoorlemmer 2004, p. 227).

Most verbs in English occur with phrases like *for hours* very freely:

- (21) *Lucy stayed/sat/coughed/swam/worked for hours.*

⁹With the alternating verbs, however, it could be argued that this construction is derived from the transitive alternant.

¹⁰Motional processes like *run*, which do not inherently express a change of location, are excluded; see fn. 3.

Some verbs, however, allow *for hours* more restrictedly. These verbs belong to the change of location and change of state classes:

- (22) a. **Lucy arrived/died for hours.*
 b. **The window broke for hours.*

I will describe such verbs as ‘inherently telic’. Note that most of these do allow *for hours* in specific contexts, however; these contexts vary from verb to verb:

- (23) a. *Lucy came for hours.* (= ‘Lucy came and stayed for hours’)
 b. *The guests were arriving for hours.*
 c. *Lucy was dying for hours.*

Several change of state verbs do freely allow the construction:

- (24) a. *The corpse decayed for years.*
 b. *The shed burned for hours.*

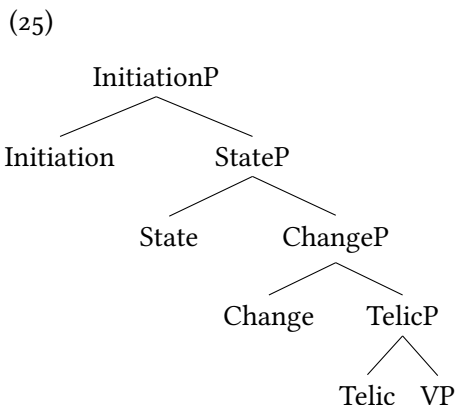
The overall generalisation I propose is that the inherently telic verbs comprise the change of location verbs and a subset of the (uninitiated) change of state verbs, but that the inherent telicity of these verbs can be overridden in certain contexts¹¹.

It is clear from the discussion in this section that the ‘unaccusativity diagnostics’ in English pick out multiple different classes of verbs. In the next section I will present a proposal to account for these patterns. I will also discuss advantages of this proposal in relation to the traditional analysis.

3 Proposal

3.1 A proposed functional structure

The analysis of split intransitivity I present here centres around the following functional structure for the lower part of the clause, equivalent to the standard ‘vP’:



¹¹The ‘semelfactive’ class of punctual intransitives like *jump* and *hiccough* pose something of a problem: Rothstein (2004, pp. 183–7) argues that they are basically telic, in contrast to Smith (1991) who claims they are basically atelic. I shall here adopt the latter view; certainly, they occur with *for hours* far more easily than verbs like *come* and *break*.

The meaning of the State, Change and Telic heads is hopefully self-evident: they respectively describe whether or not the verb denotes a state, change (of state or location) or telic event. The concept of initiation draws on that of Ramchand (2008), who defines her *init[iation]* head as ‘exist[ing] when the verb expresses a causational or initiational state that leads to the process¹²’ (p. 40). I take issue, however, with Ramchand’s assumption (pp. 78, 106) that all stative verbs have initiators: this seems to me intuitively incorrect for sentences like *The vase remained on the table*, where the subject cannot obviously be held as causing or initiating the state of remaining.

Initiation can also be conceived of as equivalent to Mithun’s (1991, see especially pp. 516–18) ‘performance/effect/instigation’. Mithun distinguishes verbs describing ‘performed’ or ‘instigated’ events like *jump* and *come* from those describing non-performed/effected/instigated events like *die* and *fall*. I will take the first set to be [+initiation] and the second to be [–initiation]. Note that initiation is separate from volition or control—some verbs (e.g. *cough*) describe events that are initiated but not controlled by the entities denoted by their subjects—and hence is a necessary but not a sufficient condition for ‘agentivity’.

I assume that each functional head in the structure given is always present in clausal constructions¹³, and that they each bear bivalent features corresponding to their categories: [±initiation] on Initiation, [±state] on State, [±change] on Change, and [±telic] on Telic. Each feature must bear either a positive or a negative value in any given construction. I also assume the verbal root V incorporates successively into each of these functional heads via head movement, resulting in a complex of heads bearing all these features.

Two questions which may arise at this juncture are, firstly, why should one encode these features in terms of a hierarchy of heads at all, and secondly, why is this particular hierarchical ordering posited? To answer both questions at once, it does seem that adopting a particular ordering captures certain empirical facts. There are various reasons for taking the order of heads given above. One of these concerns transitives: there is reason to believe that arguments associated with InitiationP are merged higher than those associated with ChangeP and/or TelicP—in active sentences, the former are typically subjects and the latter objects. Transitives will be discussed further in subsection 3.5. Further, the fact that, amongst intransitives, [–state, –change] verbs seem only to be [+initiation] (see subsection 3.3) is most easily captured by assuming Initiation to be higher than Change or State, with restrictions on the featural values of the heads it may c-select. In subsection 3.3, it will also be noted that [+change] and [+state] do not co-occur—this may be taken to suggest that the Change and State heads occupy similar positions in the hierarchy.

The order of heads is also intended to capture some of the key facts described by Sorace’s (2000) Auxiliary Selection Hierarchy (ASH), given in table 1. The ASH is formulated by Sorace on the basis of auxiliary selection patterns in Western European languages and hypothesised to be applicable to split intransitivity patterns more generally (Sorace 2000, p. 887, 2004, p. 268). By hypothesis, where a diagnostic identifies a split between two different sets of intransitives, one set will contain verbs further toward the top of the hierarchy and the other those further toward the bottom, although the ‘cut-off point’ may vary between languages and/or diagnostics.

Many of the split intransitivity diagnostics proposed for English show reasonably good to excellent correlation with the ASH, as predicted. Those diagnostics which pick out pri-

¹²Note that the definition of ‘process’ in Ramchand (2008) is different from that of Sorace (2000): for Ramchand, all non-stative verbs—including verbs of change—have a process component.

¹³Higher heads may be absent in derived constructions, e.g. prenominal past participles seem to lack State and Initiation projections (see subsection 4.1).

Controlled non-motional processes	<i>work, play, talk ...</i>
Controlled motional processes	<i>swim, run, walk ...</i>
Uncontrolled processes	<i>tremble, catch on, skid, cough, rumble, rain ...</i>
Existence of state	<i>be, belong, sit, seem, be useful, please, depend on ...</i>
Continuation of state	<i>stay, remain, last, survive, persist ...</i>
Change of state	<i>rise, become, decay, die, be born, happen, grow ...</i>
Change of location	<i>come, arrive, leave, fall ...</i>

Table 1: the Auxiliary Selection Hierarchy (based on Sorace 2000)

marily the ‘process’ verbs identify a class of verbs in categories toward the top of the hierarchy. The *for hours* diagnostic picks out all intransitives apart from those in the bottom-most category, change of location, and a subset of those in the next-from-bottom category (change of state). Prenominal past participles are only permitted with verbs in these bottom two categories. This is good support for the wider applicability of the ASH, adding to that already in the literature (in addition to Sorace 2000, see Sorace 2004, Montrul 2005 and Baker 2013; Legendre 2007b presents some evidence from diachronic patterns).

Thus it makes sense that a functional hierarchy intending to capture split intransitive patterns should reflect the ASH, and the order of heads has been selected in order to do this. The Telic head, at the bottom of the functional hierarchy, is inherently positively valued (i.e. is [+telic] not [–telic]) only with verbs at the very bottom of the ASH: change of location and some change of state verbs. The next head up, Change, has a positive value ([+change]) with a slightly larger selection of verbs, namely the change of location and change of state classes in their entirety. The State head, which is above both Change and Telic, is positively valued ([+state]) with the next highest classes in the ASH, those containing continuation of state and existence of state verbs. The remainder of verbs, towards the top of the hierarchy, by default have negative values on all three of these heads; they are [–state, –change, –telic]. (Cf. Legendre 2007a, 2007b for another approach to the ASH in terms of an ordered hierarchy of formal features, but employing Optimality Theory rather than a functional structure.)

By adopting a hierarchical order of heads, this analysis is in line with the cartographic approach to syntax (following Rizzi 1997, Cinque 1999), in which it has become commonplace to associate features with their own functional heads arranged hierarchically. The advantages of employing such an approach here constitute an argument in favour of cartography more generally.

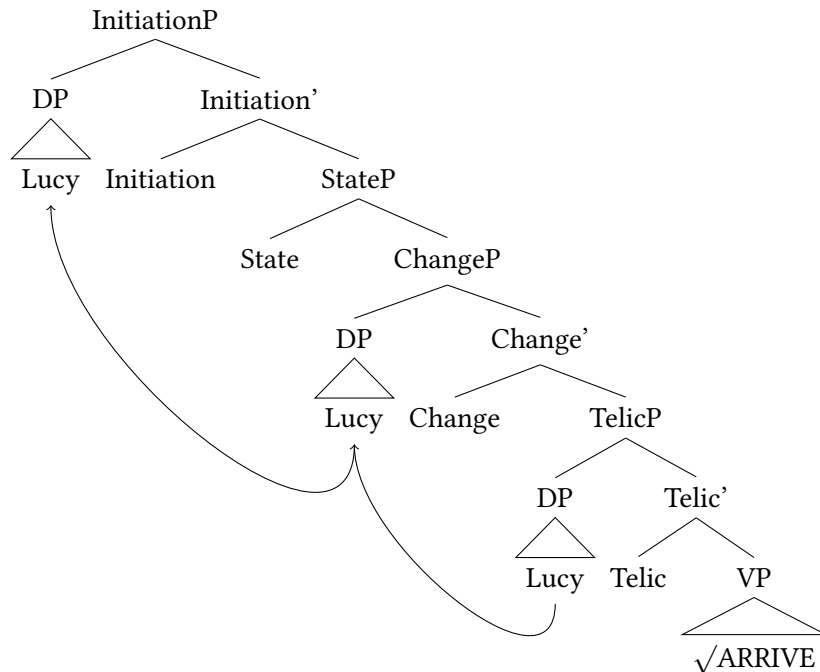
3.2 The structure and thematic roles

Each of the heads in the proposed structure is a thematic role assigner, provided it bears a positive value for its category-defining feature ([+initiation], [+state] etc.). This approach to thematic roles is broadly in line with Ramchand (2008), although it differs on the specifics in a number of ways which I will not go into here. It may be noted that any approach which, like Ramchand’s, posits three or more possible positions in which the arguments of intransitives can be merged is inherently incompatible with the unaccusative hypothesis in its traditional form (which allows for only two possible positions). The adoption of this approach to unaccusativity, therefore, may be seen as simply a natural consequence of adopting a Ramchand-style approach to thematic roles.

For clarity, I shall denote the thematic role assigned by ([+initiation]) Initiation as θ -INITIATION, that assigned by State as θ -STATE, that assigned by Change as θ -CHANGE, and that assigned by Telic as θ -TELIC. I leave open the question of whether these thematic roles are assigned as features or by other means (compare the ‘theta-features’ of Bošković and Takahashi 1998, Reinhart 2002 and others with the more traditional account under which thematic roles are not assigned featurally). Informally, θ -INITIATION marks an argument as initiating the event described by the verb, θ -STATE as undergoing the described state, θ -CHANGE as undergoing the described change, and θ -TELIC as the argument of a telic verb, perhaps an argument conceptualised as bounded in some way (see Verkuyl 1972 and subsequent work).

In line with Ramchand (2008), on this approach an argument can have multiple thematic roles; specifically, it bears the thematic role associated with every one of the thematic heads in whose specifier it is merged. Arguments merge only in the specifiers of heads bearing positively valued category-defining features. For example, the argument of a verb like *arrive* which is [+telic], [+change] and [+initiation] will be merged successively in Spec,TelicP, Spec,ChangeP and Spec,InitiationP (but not with [–state] StateP) and thus bear the three roles θ -TELIC, θ -CHANGE and θ -INITIATION:

(26) *Lucy arrived*.¹⁴



Other arguments may bear fewer roles. For example, the argument of *work* is merged only in Spec,InitiationP and hence bears only θ -INITIATION. Likewise, the argument of intransitive *melt* is merged only in Spec,ChangeP and bears only θ -CHANGE.

All this is in contrast with the traditional analysis of thematic roles, most clearly as described by the Theta Criterion:

¹⁴For clarity, I here omit movement arrows for V and the functional heads. In this and all subsequent trees I also omit all structure outside of the thematic domain.

- (27) **The Theta Criterion:** ‘Each argument bears one and only one θ -role, and each θ -role is assigned to one and only one argument.’ (Chomsky 1981, p. 35)

Whilst under my approach one can uphold the idea that each role is assigned to a single argument, and each argument must bear at least one role, there is a key difference from the traditional theory in that arguments are able to bear multiple roles.

3.3 Classes of intransitives

As stated above, each of the thematic heads is associated with a different feature: respectively $[\pm\text{initiation}]$, $[\pm\text{state}]$, $[\pm\text{change}]$ and $[\pm\text{telic}]$. Different combinations of the different values of these features produce a number of different classes of intransitive verbs.

It can be noted from the outset that not all combinations of features seem to occur, however. For example, a verb cannot express both a continuing state and a change of state (or location) of an argument: an intransitive cannot be both $[\text{+state}]$ and $[\text{+change}]$ at once. It also appears that only $[\text{+change}]$ verbs are ever inherently $[\text{+telic}]$ (although other sorts of verbs may also be telicised)—this may be because verbs which are inherently telic must express an inherent endpoint, and therefore an inherent change¹⁵. There also do not appear to be any uninitiated process verbs ($[-\text{initiation}, -\text{state}, -\text{change}]$).

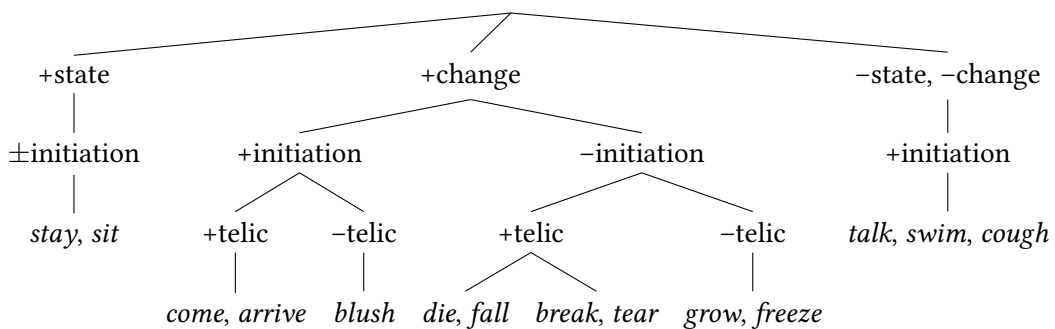
The classes which do occur are shown in table 2, together with some exemplary verbs. $[\pm\text{telic}]$ is used as shorthand to refer to inherent telicity, which may be overridden.

	initiated	state	change	telic
A. <i>talk, swim, cough ...</i>	+	–	–	–
B. <i>stay, sit ...</i>	+/-	+	–	–
C. <i>come, arrive ...</i>	+	–	+	+
D. <i>break, tear ...</i>	–	–	+	+
E. <i>die, fall ...</i>	–	–	+	+
F. <i>melt, burn ...</i>	–	–	+	–
G. <i>blush, wilt ...</i>	(+)	–	+	–

Table 2: classes of intransitives

The classes may also be represented in terms of a ‘feature geometry’-type hierarchy as follows:

(28)



¹⁵If the semelfactive class were to be considered inherently telic, contrary to my assumptions (see fn. 11), this would create a class of $[-\text{state}, -\text{change}, +\text{telic}]$ verbs.

I have conflated initiated and uninitiated states (class B) because the verbs in this class seem to vary quite freely between internally initiated and non-internally initiated readings, for example:

(29) a. [+initiation]: *Lucy stayed in the room (deliberately).*

b. [–initiation]: *The letter stayed on the table.*

I have also, in table 2, included the [+initiation] feature of class G (the internally caused verbs) only in brackets, on the grounds that these verbs are sometimes conceived of as [–initiation]—i.e. they are sometimes associated with the same features as verbs of class F. See the argument regarding these verbs in subsection 2.3.

The uninitiated inherently telic verbs divide into two groups (classes D and E) on the basis of whether or not they allow the resultative construction and causative alternation. The basis for the distinction between verbs which allow these and those which do not was discussed in subsection 2.3. Note that change of location verbs may also have non-initiated readings; i.e. in some cases they may fall within class E rather than class C:

(30) *The letters arrived.*

3.4 Comparison with the traditional analysis

The analysis presented above has a number of advantages over the traditional analysis of intransitives into just two classes, unergatives and unaccusatives.

Observe again that several of the diagnostics demonstrably relate to argument structure. Several of the ‘process’ diagnostics demonstrate parallels between intransitive arguments and (active) transitive subjects (as for example in (31)), the resultative construction can denote an end-state either of an intransitive argument or the O argument of transitives (32) and prenominal past participles describe what in the equivalent clausal construction would again be either an intransitive argument or a transitive O argument (33):

(31) a. intransitive: *walker*

b. transitive: *destroyer* (‘one who destroys’, not ‘one who is destroyed’)

(32) a. intransitive: *the lake froze solid*

b. transitive: *Lucy froze the ice cream solid*

(33) a. intransitive: *a grown man*

b. transitive: *a destroyed city*

This suggests we should not abandon an explanation of these diagnostics in terms of argument structure positions. But a problem for the binary analysis in this regard is that it does not account for variation *within* the ‘unaccusative’ class. Whereas the ‘process’ verbs—which seem to be the strongest candidates for the class of ‘unergatives’—behave as

a reasonably coherent set in regard to the diagnostics, the remainder of intransitives exhibit a great deal of heterogeneity. The change verbs, the subsets of that class which are inherently telic and/or those which allow the resultative construction and undergo causative alternations, and the stative verbs all behave differently with regard to various of the purported diagnostics of unaccusativity presented in the literature.

A multiple-head analysis largely overcomes this problem. The behaviour of each of the different (sub)classes can be captured by relating the different diagnostics to the different heads, and multiple different argument positions (see section 4). Whilst some problems nevertheless remain in relation to the apparently idiosyncratic behaviour of certain verbs, the proposed analysis nevertheless provides a level of explanation which is lacking in the traditional unaccusative hypothesis.

A related advantage of the multiple-head analysis is that it captures the fact that each diagnostic picks out a more-or-less semantically coherent set of verbs; the classes that arise, therefore, are similarly semantically coherent. The stipulation of separate ‘unaccusative’ or ‘unergative’ properties would seem redundant, then, when the observed behaviour can be adequately described without them.

The binary analysis, further, makes no clear predictions as to the exact membership of the classes. That this is a problem becomes particularly clear when it is considered that there are a number of verbs—the statives in particular, plus some others: *go*, *come*, *leave*, *die*, *become*—which fail both the ‘unergative’ diagnostics (or at least, pass them only sporadically) and the ‘unaccusative’ ones; i.e. they are not positively identified as belonging to one class or the other by any diagnostic. (The *for hours* diagnostic does group the stative verbs with the ‘unergatives’, but it also picks out a number of verbs which otherwise seem to test as ‘unaccusative’, creating a new problem of unwanted overlap between the classes identified: we do not expect verbs be both unaccusative and unergative, at least not without a corresponding shift in meaning—which does not obviously take place here.) How is the linguist to decide whether such verbs are to be classified as unergative or unaccusative? The language learner faces the same problem: to assume that the membership of the two classes is encoded directly in Universal Grammar would seem to run contrary to minimalist ideals. The lack of cross-linguistic uniformity in the putative classes (Rosen 1984 and much of the subsequent literature) would also suggest that the composition of the classes is something which would have to be learned.

Of course this problem does not simply disappear when a number of smaller classes are posited instead. But its significance is perhaps reduced. Under the binary classification the stative verbs must be placed, presumably quite arbitrarily, in one class or the other. When multiple classes are posited, however, stative verbs can simply be omitted from all the other classes—and thus placed, quite literally, in a class of their own.¹⁶ Additionally, as the multiple class analysis has a more straightforward relation between the syntactic classes and semantics, the semantic property of stativity may be sufficient for such a class to be posited. Further, all verbs express states, in some sense, but most of them express more or less complex series of distinct states; it perhaps makes sense that the simplest case,

¹⁶There are of course a number of separate diagnostics for statives: see Dowty (1979, pp. 55–6). Note that even these, however, seem generally to do with behaviours which statives *do not* allow, e.g. pseudo-clefts and *do so* constructions: the only construction of which I am aware which positively identifies statives by occurring only with them and no other verbs is their ability to occur in the simple present tense in a non-habitual sense: compare (stative, non-habitual) *Lucy knows the answer* with (non-stative, habitual) *Lucy reads books*. Many intransitive statives do not share this behaviour, however: *Lucy persists* or *Lucy sits* expresses habitual meaning.

the expression of a single invariant state, should be in some sense the ‘default’ (where verbs are classified where there is no positive evidence for classifying them in any other way).

What about the other exceptional verbs (*go*, *come*, etc.)? As with all (actual or apparent) lexical idiosyncrasies, these pose a problem. One possible solution may simply be to postulate that these verbs, too, form their own class, one which lacks any of the features to which the diagnostics are sensitive. This is problematic, though, given that we have postulated [\pm change] as the feature governing most of the patterns under discussion, and these verbs would also seem to denote changes either of state or location. Perhaps the semantic evidence alone is enough for these verbs to be classified as [+change] verbs, and they fail to partake in the constructions otherwise available to verbs associated with this feature for separate reasons. It may be notable that the verbs in question all seem to be extremely frequent, and hence perhaps particularly liable to show exceptional behaviour.

In conclusion, the new analysis I have presented has various advantages over the traditional analysis. These provide good reasons for preferring the new analysis to the old.

3.5 Transitives

The new approach detailed above can also be utilised to describe the thematic properties of the arguments of transitive verbs. In this subsection, I outline some ways in which this may be done.

Transitive verbs’ A arguments (subjects, in active contexts) are generally initiators of the event described (bearing θ -INITIATION). (A class of exceptions includes some or all subject experiencers.) O arguments (objects) seem to show more variation. In a large number of cases, the O argument undergoes a change of some sort (i.e. it bears θ -CHANGE), for example:

- (34) *Lucy* *eats the hamburger.*
 θ -INITIATION θ -CHANGE

Object experiencers may bear θ -STATE in some instances, as in the following when a habitual state of being frightened is described:

- (35) *Dogs* *frighten Lucy.*
 θ -INITIATION θ -STATE

In other instances the O arguments of such verbs may be θ -CHANGE:

- (36) *The dog* *suddenly frightened Lucy.*
 θ -INITIATION θ -CHANGE

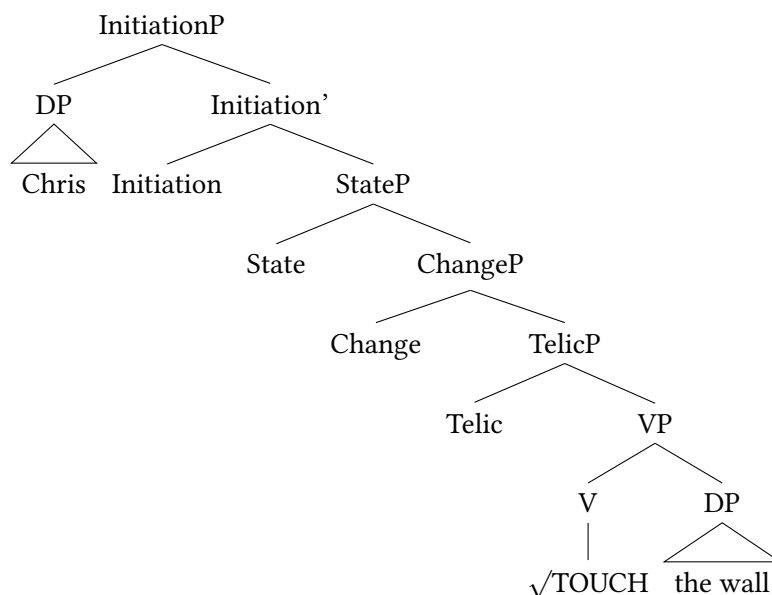
A problem with this analysis of object experiencer verbs is that it assigns them a similar or identical structure to many ‘canonical’ transitives, with the equivalent of the traditional ‘external argument’, i.e. an argument marked θ -INITIATION. This is in conflict with evidence that both arguments of such verbs are ‘internal’ (Belletti and Rizzi 1988), i.e. in my terms the active subject is not (or at least is not first-merged) in Spec,InitiationP. Subject experiencer verbs (e.g. *fear*, *worry*) also present a problem (as they do for most theories), given that they seem to have identical or very similar thematic structures to object experiencer verbs that is manifest in a different order of arguments. I leave these issues surrounding psych predicates aside for future research.

In many instances, transitive verbs appear to predicate neither a change nor a state of the O argument—as for example in the following, where *the wall* remains unaffected by the event:

- (37) *Chris is touching the wall.*
 θ -INITIATION ???

On the basis of the analysis of intransitives, it is not immediately clear what thematic role or first-merge position should be assigned to O arguments of this sort. Following Ramchand (2008), I suggest these arguments may be merged in a complement rather than a specifier position. Unlike Ramchand, however, I tentatively hypothesise that this position is the complement to the lexical head V:

- (38) *Chris is touching the wall.*



Transitives also vary as to whether they are telic or not; this may be reflected in the presence or absence of θ -TELIC on their arguments. The O argument of a telic sentence may bear this role in addition to another:

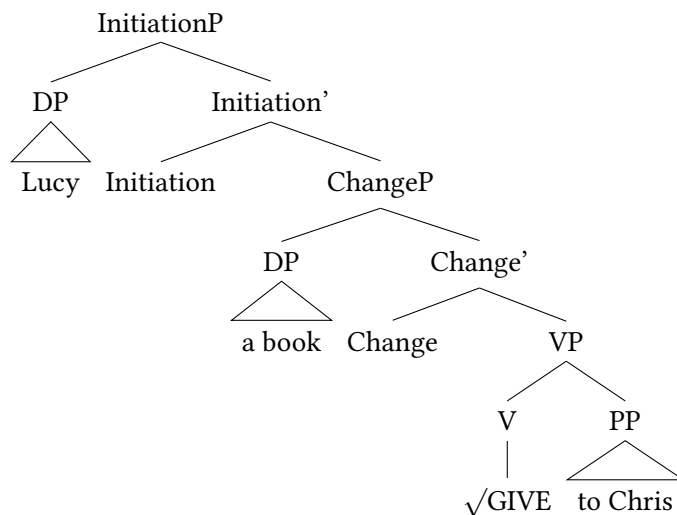
- (39) *Lucy ate the hamburger in an hour.*
 θ -INITIATION θ -CHANGE+ θ -TELIC

In an atelic sentence, however, the θ -TELIC role would be absent. Various authors have suggested a link between telicity (or something like it) and thematic roles: see for example Borer (2005, especially chs. 3 and 4) and Tenny (1987). In some languages, such as Finnish, the presence or absence of θ -TELIC may correspond to a case distinction (see Kiparsky 1998 for discussion of the relation of telicity and case in Finnish).

I conclude this subsection with a brief presentation of a possible analysis of ditransitives. I hypothesise that, in non-dative shifted constructions, the ‘theme’ bears θ -CHANGE (in many instances the ‘change’ may be fairly abstract), whereas the ‘recipient’ is a true

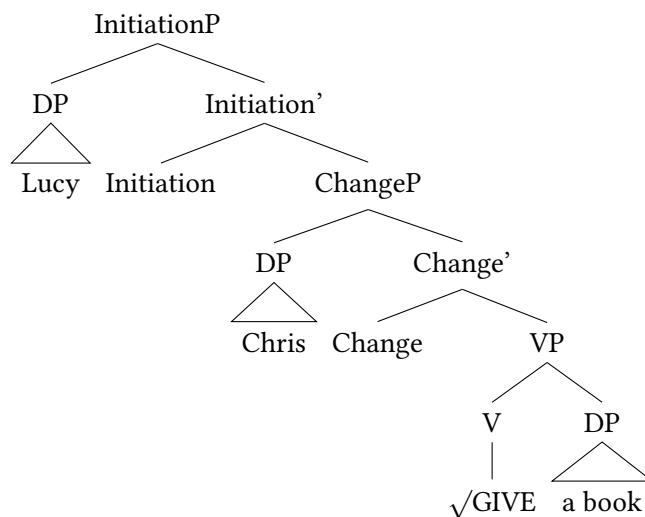
complement in VP (in the following two diagrams I omit the State and Telic heads for simplicity of presentation):

(40) *Lucy is giving a book to Chris.*



Under dative shift (at least provided there is no literal change of location or state) the order is reversed: the recipient bears θ -CHANGE whereas the theme is in Comp,VP:

(41) *Lucy is giving Chris a book.*



This alternation is permitted by the abstract nature of the change under discussion¹⁷.

3.6 Summary

This section has presented a new analysis of split intransitivity and thematic roles in English. In the following section, I sketch formal treatments of the diagnostics discussed in

¹⁷Many languages express possession in terms of location (Freeze 1992, pp. 580–2, Payne 1997, pp. 126–7); it is not unreasonable to suppose change of possession may be expressed in the same thematic terms as change of location.

section 2 in terms of this new analysis.

4 Formal analysis of the diagnostics

The diagnostics of split intransitivity (many of which also occur with transitives) divide naturally into two main groups: constructions which are morphological in character and constructions which involve alternations of argument structure. In the following two subsections, I discuss each of these in turn, followed by a subsection on *out*-prefixation (which exhibits elements of both groups) and finally subsections on two miscellaneous diagnostics: resultatives and then the *for hours* diagnostic.

4.1 Morphological derivations

The diagnostic constructions which can be seen as morphological in character are suffix *-er* and the prenominal past participle, as well as *out*-prefixation which I will discuss in subsection 4.4. Here, I assume a Distributed Morphology-type framework in which the morphological processes which derive these constructions take place in the syntax according to the usual constraints on syntactic formations. Both *-er* and the past participle morphology (realised in various ways, often as *-ed* or *-en*—I shall denote it here by the latter) are viewed as category-denoting heads which incorporate the root and categorise it respectively as a noun and an adjective¹⁸.

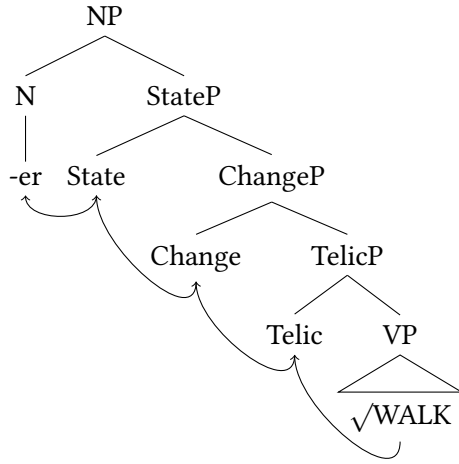
Intransitive *-er* selects primarily for [−state, −change] complements: this suggests a StateP, on the head of which both [±state] and [±change] can be assumed to be marked¹⁹, is selected, provided it has the correct feature values. In some cases, as we have seen, *-er* also allows [+state] or [+change] complements, e.g. *survivor* or *early-riser*; these are, however, lexically restricted. I shall assume *-er* is a nominal head which essentially occupies

¹⁸In standard Distributed Morphology, roots do not themselves bear category labels and categorisation is via heads bearing the labels *n*, *v*, *a* etc. (Embick and Noyer 2007, p. 296). For consistency—I have elsewhere denoted the verbal root as of category V—I do not reflect this in my notation here, although my examples could easily be reworked to fit.

¹⁹This follows from the assumption that the verbal root and the Telic and Change heads all incorporate into State: hence the features of Change are present on State as well.

the same position as Initiation does in the clause²⁰:

(42) *walker*



A complication is that, used with transitives, *-er* can occur with verbs that are [+change], e.g. *destroy*, which denotes a change affecting its O argument, has a derived form *destroyer* (other examples include *eater*, *maker*, *murderer* etc.). In these cases, however, it is never the argument that would be θ -CHANGE that is described, but rather the θ -INITIATION argument. The generalisation seems to be that *-er* can select a [+change] complement providing that the θ -INITIATION and θ -CHANGE roles are distinct for that verb (with some lexical exceptions discussed above). Quite how these analyses are to be formalised remains uncertain: I speculate that it may be related to a general theory of how the difference between an intransitive verb which assigns two roles X and Y to a single argument and a transitive verb which assigns X and Y to separate arguments is to be represented formally (ideally, featurally), but will explore the matter no further here²¹.

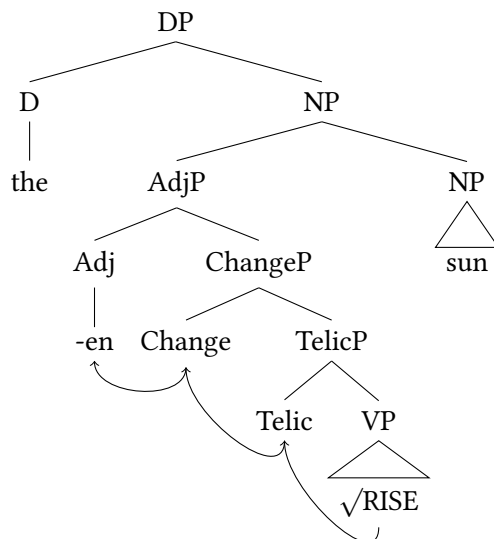
Moving to the next diagnostic, the prenominal past participle is restricted to (a subset

²⁰Another possibility is that *-er* occupies the Spec,InitiationP position and may actually receive the θ -INITIATION role itself.

²¹A few psych verbs, both subject and object experiencers, allow *-er* in spite of being apparently [+state], e.g. *love*, *hate*, *comfort*. This is not necessarily problematic but I defer to give a fuller analysis here, especially given the need for a better understanding of psych verbs generally.

of) [+change] verbs: this suggests the Adj head *-en* selects a [+change] ChangeP:

(43) *the risen sun*



When transitives are considered, however, prenominal past participles can be derived even from verbs which do not take a θ -CHANGE argument, e.g. *the much loved dancer* or *the oft-read book*²². They also occur with verbs that do denote changes, e.g. *the half-eaten hamburger*. This suggests an analysis analogous to Sheehan's (to appear, section 1.1) analysis of ergative case in Hindi. In Hindi, ergative is found on all transitive A arguments and 'extended' to a subset of intransitive arguments, namely those of [+volition] verbs. Parallel to this, we might say that the availability of the prenominal past participle (subject to further restrictions—lexical and/or regarding the presence of a modifier—which I will not explore here) is found generally with transitive verbs, and extended to a subset of intransitives: namely those with θ -CHANGE arguments.

4.2 Argument structure alternations

A number of the diagnostics involve the addition of some element, often an argument, to the clause. In this subsection I discuss the *V away*, *V one's way into* and cognate object constructions and the causative alternation. (I consider resultatives in subsection 4.3 and *out*-prefixation in subsection 4.4.) *V away* and *V one's way into* can also be used with verbs that are in general transitive, where it becomes clear that they also involve the removal of an argument—they are incompatible with ordinary O arguments:

- (44) a. *Hannibal destroyed the gate.*
 b. *Hannibal was destroying away (*the gate).*
 c. *Hannibal destroyed his way (*the gate) into the city.*

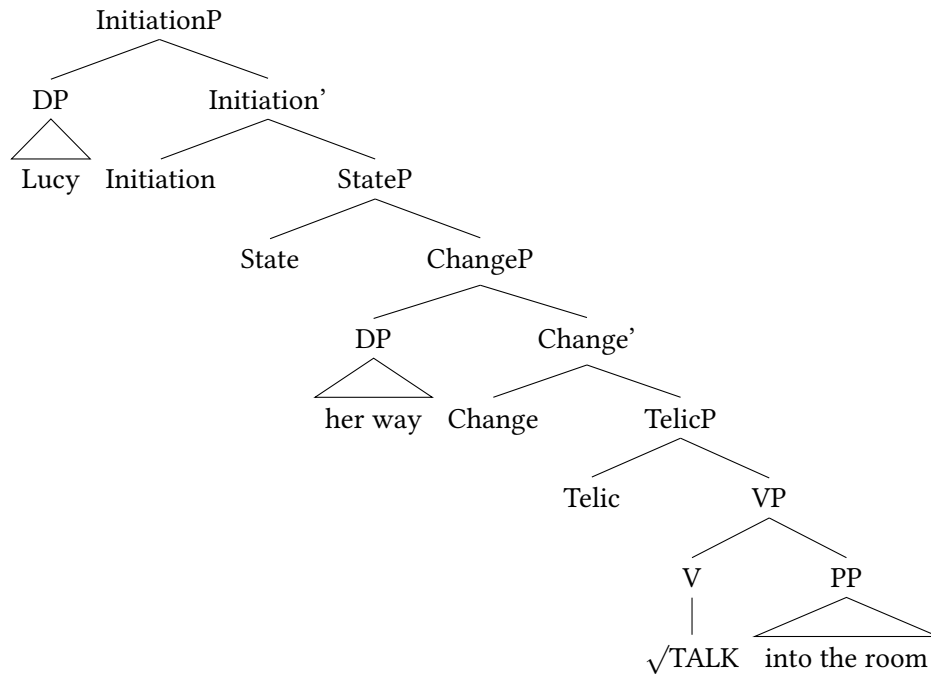
²²With transitives as with certain intransitives, the grammaticality of this construction frequently shows sensitivity to the present of a suitable adverb.

I suggest the addition of the new element and the removal of an argument can be linked: in some way the presence of the new element ‘blocks’ the presence of the O argument. There are at least two ways in which this may be achieved: firstly, the presence of the ‘new’ element in Spec,XP may block the presence of any argument which might otherwise be merged there; secondly, the ‘new’ element may be associated with a feature configuration which is incompatible with the configuration required for the merger of another argument.

The first can be illustrated with the V *one’s way into* construction. *one’s way* is a θ -CHANGE argument, undergoing the change of coming into existence as a result of the event described by the verb. This construction is thus incompatible with other θ -CHANGE arguments, be they transitive O arguments or the intransitive arguments of [+change] verbs:

- (45) a. *Lucy talked her way into the room.*
 b. **Lucy arrived her way into the room.*
 c. **Lucy ate her way the hamburger into the room.*

- (46) *Lucy talked her way into the room.*²³



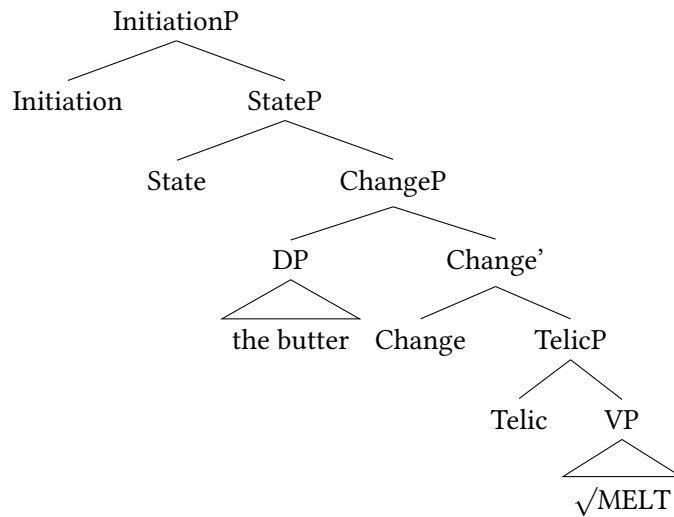
The construction is also blocked with transitive verbs whose O arguments I have analysed as VP complements—i.e. constructions like **Lucy touched her way into the room the wall* are ungrammatical. One promising analysis is that the *into* phrase occupies Comp,VP and blocks the presence of the O argument. More generally, it may be that constructions with O arguments in addition to *one’s way* are ruled out (at least in part) because it is not possible for both arguments to be assigned (accusative) case.

A complication is that the construction does occur with non-inherently telic [+change] verbs which also undergo the causative alternation, i.e. atelic change of state verbs which

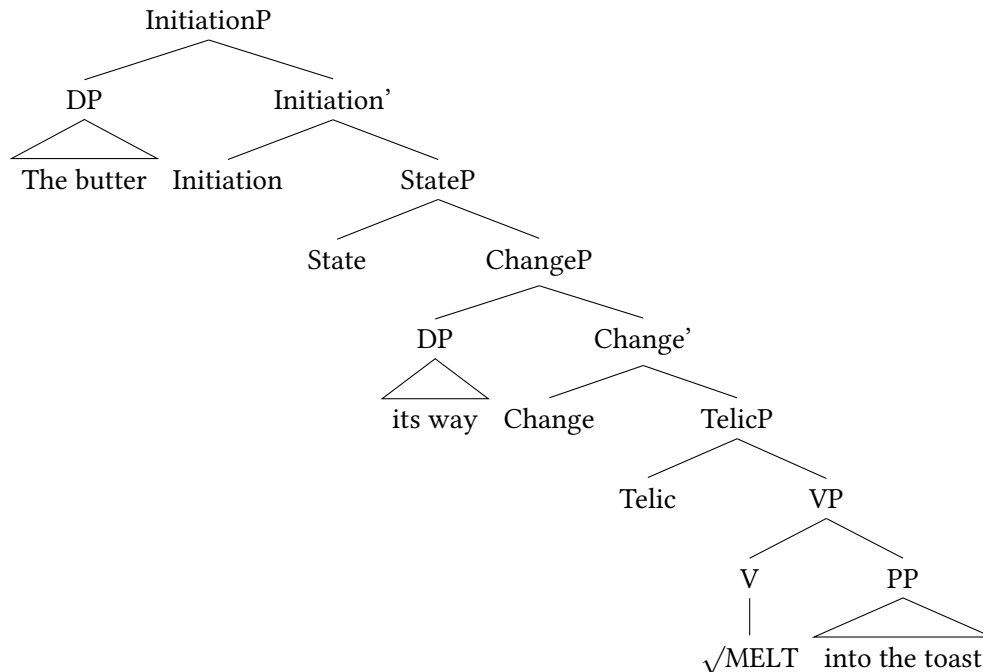
²³Here and subsequently, I omit arrows illustrating movement of V and the functional heads.

lack an initiator (*burn*, *melt* etc.). This absence of initiator may be key here: these verbs may take advantage of their ‘empty’ Spec,InitiationP slot to ‘repurpose’ their arguments as θ -INITIATION, causing the change denoted by the verb to be reconceptualised as affecting the new θ -CHANGE argument, *one’s way*. That is to say, *The butter* bears θ -CHANGE in *The butter melted*, but θ -INITIATION in *The butter melted its way into the toast*:

(47) *The butter melted.*



(48) *The butter melted its way into the toast.*



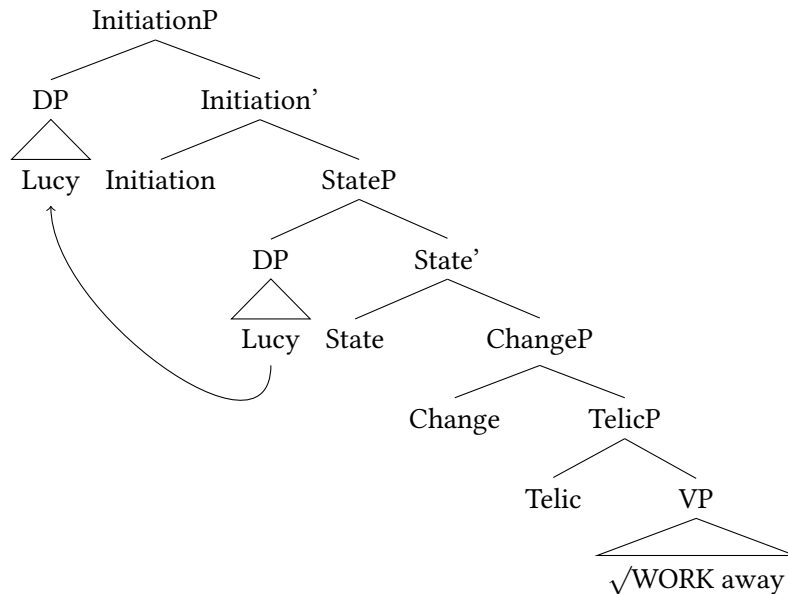
Inherently telic verbs (including all change of location verbs) do not permit V *one’s way into* even when they lack initiators, as is the case for example with *break* and *fall*. Possibly, although the subject of these verbs can be divorced from its θ -CHANGE role, it cannot be

divorced from an (inherent) θ -TELIC role if one is present. One way in which this might follow is if the subject is only first-merged in Spec,InitiationP if it has been blocked from merging in Spec,ChangeP by the presence of *one's way*. However, if the subject is earlier merged in Spec,TelicP (as it will be in inherently [+telic] sentences) it will be preferred to *one's way* as the argument merged in Spec,ChangeP, as arguments merged in Spec,TelicP are always subsequently merged in Spec,ChangeP, and hence *one's way* will not be able to merge at all.

The construction is also blocked with [+state] intransitives: this is related to incompatible feature configurations. The presence of *one's way* requires a [+change] Change head, but [+change] Change cannot occur with [+state] State. Hence sentences like **Lucy lasted/survived/belonged/sat her way into the room* do not occur. As to why θ -STATE arguments cannot be recast as θ -INITIATION ones, as θ -CHANGE ones may be, it may be that whilst the change denoted by the event can be conceptualised as affecting *one's way* rather than the subject, it is not possible to conceptualise a state as predicated of *one's way*. Thus, while it is possible to say of *The butter melted its way into the cake* that the change is predicated of *its way* (which undergoes a change of coming into existence through the event of melting), it is not possible to conceptualise a sentence **Lucy lasted her way into the room* where *her way* undergoes a state of lasting.

A similar argument concerning incompatible feature configurations may account for the distribution of the V *away* construction. I suggest that the particle *away* induces a type of [+state] reading.

(49) *Lucy is working away.*²⁴



Evidence for this stative analysis of the construction comes from the fact that in a sentence like *Lucy was freezing away outside in the snow*, the subject *Lucy* need not be undergoing an actual change from an unfrozen to a frozen state; rather, the sentence describes an ongoing state. *Lucy* is θ -STATE, not θ -CHANGE. Likewise, a construction like *Chris is working away* may be interpreted as ‘Chris is in the ongoing state of working’: *Chris* may

²⁴I am agnostic as to the position of *away*; plausibly it is itself an adjunct/specifier of StateP.

have a θ -STATE role in addition to the usual θ -INITIATION role. This analysis is supported by the behaviour of *V away* with the diagnostics of stativity (from Dowty 1979, pp. 55–6), as it appears to be restricted in contexts where statives are restricted, such as the following:

- (50) a. **Lucy forced Chris to play away.*
 b. **Play away!*
 c. **Lucy deliberately/carefully played away.*
 d. **What Lucy did was play away.*

V away is accepted at least to an extent with verbs denoting changes of state, e.g. ?*The weeds were growing away in the garden.* This suggests that some speakers allow such verbs to be reconceptualised as expressing states, although the inherent change-denoting nature of these verbs may present an obstacle. *V away* does not appear to occur with change of location verbs, presumably because it is not possible to reinterpret these in a stative sense.

The question of why *V away* does not generally occur with verbs that are [+state] regardless remains²⁵. However, as *away* derives a stative reading, it may simply be avoided with verbs that are [+state] anyway as this would incur redundancy.

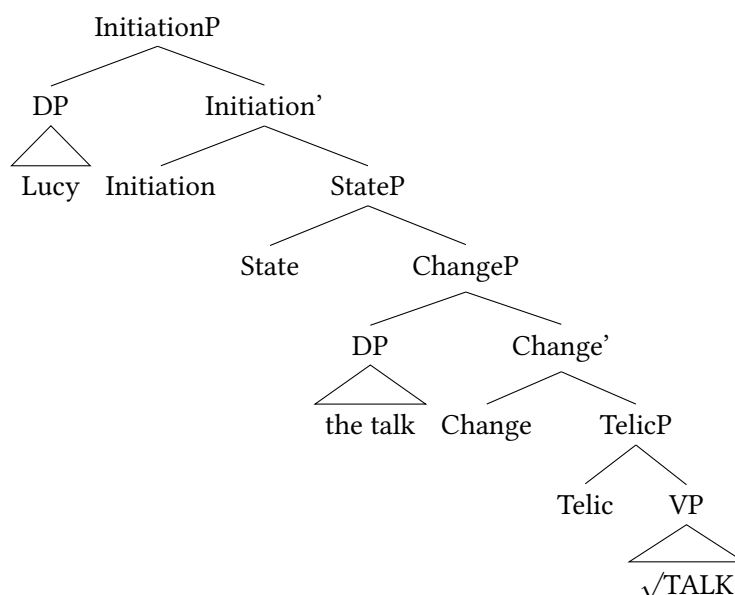
Another issue is why *V away* does not occur with transitive verbs with O arguments analysed as VP complements, e.g. **Lucy is touching away the wall.* It is possible that some general principle prohibits any sentence with an argument that is a VP complement from also having a θ -STATE argument; I am not aware of any constructions where the two co-occur. A solution to this issue may therefore arise from a more general theory of the co-occurrence restrictions on thematic roles.

Another split intransitivity diagnostic which involves an argument structure alternation is the cognate object construction, in which an argument (the ‘cognate object’) surfaces which is not otherwise present. This construction does not occur with verbs that would otherwise be transitive anyway. One analysis of this construction is that the cognate object occupies Spec,ChangeP (where Change is valued [+change]) and bears the θ -CHANGE role: the change in question being the coming into existence of the nominal as a consequence of the event expressed by the verb. It is therefore incompatible firstly with verbs with an existing θ -CHANGE argument, and secondly with [+state] verbs (which cannot occur with

²⁵A considerable minority of speakers do allow this construction with at least some verbs, e.g. they accept *Lucy was surviving away.*

[+change] verbs).

(51) *Lucy talks the talk.*



An exception to the rule that verbs denoting changes do not allow cognate objects is posed by the phrase *die a death*. However, I have discussed earlier how *die* does not pattern with other change of state verbs in relation to the causative alternation and the resultative construction. This opens up the possibility that *die* is simply not grammaticalised (at any rate not consistently) as syntactically [+change] in English, in spite of its semantics.

To consider one final diagnostic in this subsection, whether the causative alternation is viewed as the addition of an argument to an intransitive base, or as the removal of an argument from a transitive, the argument that is present in the transitive but not the intransitive alternant is that which bears θ -INITIATION. The alternation is thus ruled out with any intransitive verb that already has a θ -INITIATION argument, as Spec,InitiationP is already filled.

There is another complication, however: the alternation only occurs with change of state verbs. This may arise from general principles of how thematic roles are assigned. Change of state verbs seem to prefer not to assign both θ -INITIATION and θ -CHANGE to the same argument (the internally caused verbs may have θ -INITIATION arguments, but even they do not always seem to instantiate this role). Hence, when a θ -INITIATION role becomes available, it is preferentially assigned to a second argument separate from the θ -CHANGE argument. However, it is much more usual for state and change of location verbs to have a single argument bearing θ -INITIATION in addition to the θ -STATE or θ -CHANGE role, for example:

(52) *Lucy remained in the room (deliberately).*
 θ -INITIATION
 $+\theta$ -STATE

(53) *Lucy arrived.*
 θ -INITIATION
 $+\theta$ -CHANGE

Potentially, then, when a θ -INITIATION role becomes available with these verbs where it might otherwise not be—with verbs that are usually [–initiation] like *survive* or *fall*—the effect is not that a new argument is merged, because there are no preference against linking θ -INITIATION to the existing argument (as there would be with a change of state verb) so that argument itself moves to Spec,InitiationP. In sum: changes of state ideally lack grammaticalised internal initiation, so the addition of θ -INITIATION results in an extra argument; states and changes of locations can easily be conceived as internally initiated so the addition of θ -INITIATION results in that role being assigned to the existing argument.

4.3 Resultatives

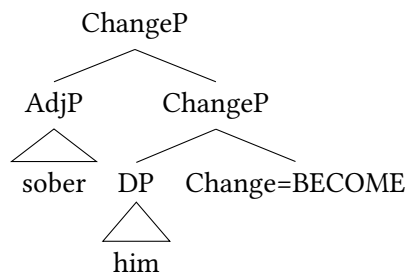
To reiterate the discussion in subsection 2.3, the resultative construction occurs with both transitives and intransitives, and expresses through an AdjP or PP an end-state obtained through the event expressed by the verb affecting a θ -CHANGE argument that does not itself initiate the changing event.

The restrictions on its use can be seen as related to restrictions on the thematic roles borne by the nominal referred to by the phrase denoting the result state: the AdjP or PP I shall denote the ‘result phrase’. Firstly, a result state can only arise from a change of state, and hence the result phrase can naturally only refer to those θ -CHANGE arguments, specifically those referring to a change of state, not a change of location: plausibly the result phrase is merged within ChangeP. Secondly, the result phrase cannot describe an argument which is also marked θ -INITIATION.

My analysis of resultatives is an adaptation of Hoekstra’s (1988) approach (see Zhang 2009, section 2 for an overview of other approaches in the literature). Hoekstra analyses the affected argument + result phrase part of a resultative as a small clause. I suggest small clauses in general can be conceptualised as StatePs or ChangePs containing an argument and a modifier. In a stative small clause, the head State is interpreted as an abstract verbal element with the meaning BE; in a small clause denoting a change, the Change head is interpreted as an abstract verbal element with the meaning BECOME. Hence the small clause *him sober* in *Lucy wants him sober* has the following structure, and is interpreted the

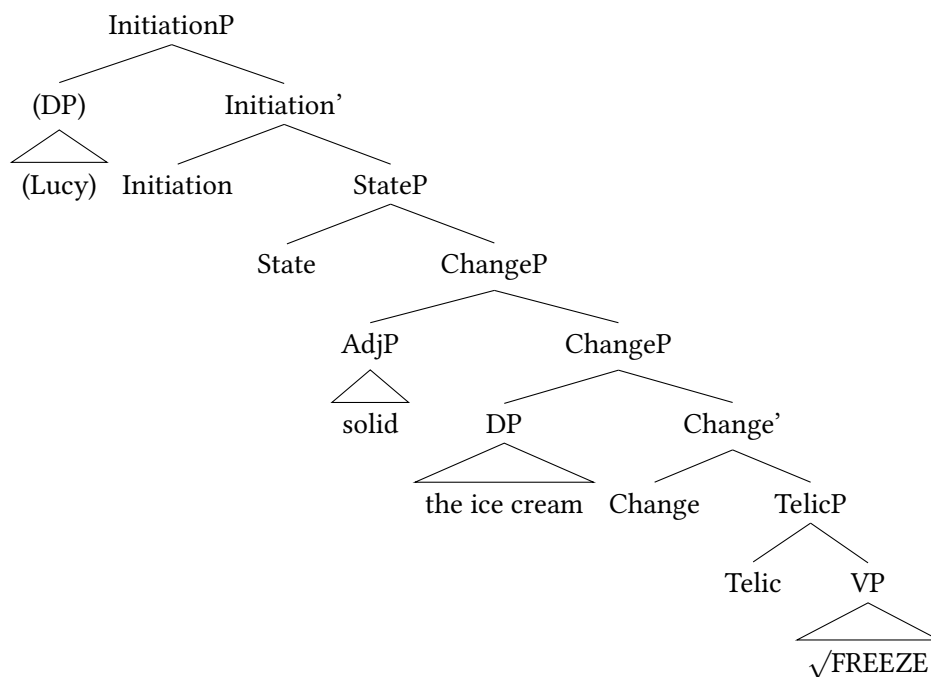
same as ‘him to become sober’:

(54) *(Lucy wants) him sober.*



Resultatives also contain a ChangeP containing a modifier (the result phrase):

(55) *Lucy is freezing the ice cream solid. / The ice cream is freezing solid.*



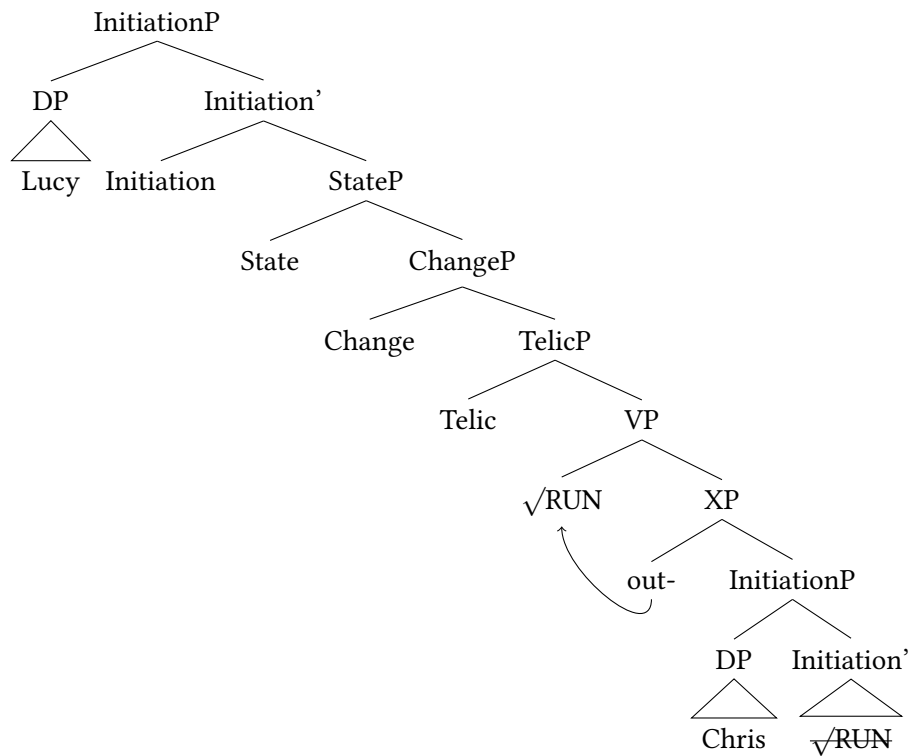
I suggest that the presence of the result phrase causes the ChangeP in these constructions to act similarly to a small clause in some ways. In particular, this may explain the restriction regarding θ -INITIATION. Small clauses constitute a thematically complete domains: their arguments do not need to receive thematic roles from outside the small clause. Plausibly such ‘thematic domains’ are a type of phase, and once the phase is sent to LF to receive its thematic interpretation no new thematic roles can be assigned to the arguments contained within it. The ChangeP in resultatives, which has a structural similarity to small clauses, is also a phase. Hence any arguments it contains cannot receive roles assigned higher than ChangeP; specifically, they cannot receive θ -INITIATION (as the phase lacks InitiationP). This means that verbs which need to assign θ -INITIATION are incompatible with the construction.

4.4 *out*-prefixation

out-prefixation involves both a morphological process and the addition of an argument (namely a O argument). However, it presents a difficulty from a thematic perspective in that both this O argument and the A argument appear to be initiators of the event described by the verbal root: thus, *Lucy outran Chris* entails both *Lucy ran* and *Chris ran*. This is surprising as we do not generally expect to find two arguments marked with θ -INITIATION.

Irube (1984, p. 114) suggests that prefix *out-* may be analysed as a sort of preposition (with the O argument in its complement) with the meaning *X-er than*, into which the verbal root incorporates. Drawing on this, I suggest an analysis in which *out-* is a head which selects a clausal complement, analogous to the selection of a clause in comparative contexts introduced by phrases like *more than*:

(56) *Lucy outran Chris.*



out- incorporates into the higher V whereas the lower V is deleted: this is analogous to the deletion of the lower VP in sentences like *Lucy eats sandwiches more than Chris eats sandwiches*²⁶. The lower argument surfaces as the O argument.

out-prefixation is in general limited to [–state, –change] verbs; this may be due to a restriction on the type of complements *out-* may c-select. (Whilst *out-* may be employed with

²⁶An explanation as to why this deletion is obligatory with *out-* remains elusive. Compare *than*, which optionally allows the VP to be retained or substituted with *do*:

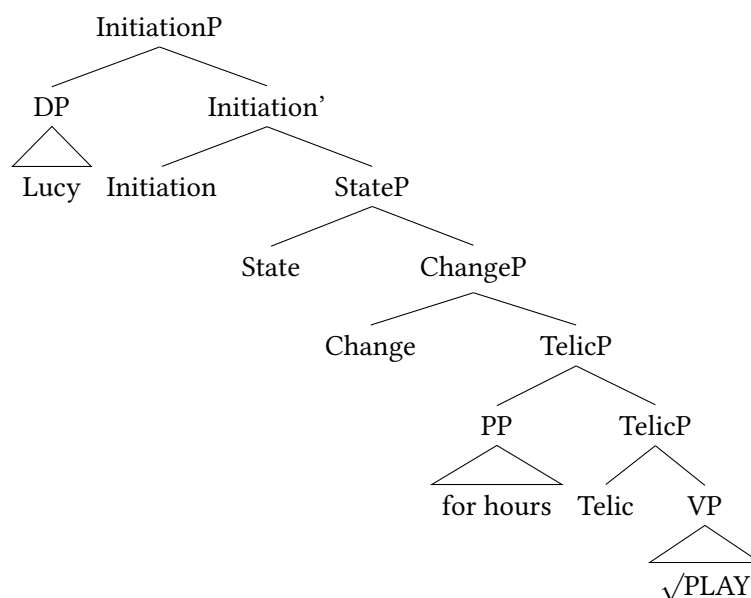
- (57) a. *Lucy eats sandwiches more than Chris eats sandwiches.*
 b. *Lucy eats sandwiches more than Chris does.*

verbs that are otherwise [+state] or [+change] transitives, in these cases the θ -STATE or θ -CHANGE argument does not surface, suggesting [-state, -change] values in these contexts.) There are however a few exceptions to this generalisation, e.g. *outstay*, *outlast*, *outgrow*, *?outmelt*, *?outburn*. Some systematicity may be apparent here: these are all [-initiation] verbs, suggesting an argument that usually bears θ -STATE or θ -CHANGE can here be reanalysed as having θ -INITIATION instead.

4.5 *for hours*

I conclude this section with a brief discussion of the *for hours* diagnostic. The incompatibility of adverbials like *for hours* with inherently [+telic] verbs can be seen to result from the adverbials bearing their own [-telic] features: a clause cannot contain both [+telic] and [-telic] values at the same time. Following the approach to modifiers taken by Cinque (1999), it is very plausible that *for hours* is merged within TelicP:

(58) *Lucy played for hours.*



In summary, the various diagnostics which pick out split intransitive behaviours prove amenable to analysis in terms of a functional hierarchy of thematic heads, which is further evidence in support of such an analysis.

5 Conclusion

The principal basis of this article has been the empirical analysis presented in section 2. This analysis showed that the traditional diagnostics for split intransitivity in English identify different sets of verbs, and not obviously just the two classes predicted by Perlmutter's (1978) unaccusative hypothesis. This was considered further in section 3, which presented a new approach to split intransitivity and thematic roles with multiple argument-introducing heads and multiple intransitive classes, argued to be superior to the two-way analysis of the intransitive split, and extendible to transitives. Nevertheless, this is not to be seen as

a radical alternative to the unaccusative hypothesis, but rather a development of it. Two of the key insights of the unaccusative hypothesis are retained: (i) that there are multiple classes of intransitive verbs; and (ii) that these classes can be related to different positions of these verbs' arguments. In contrast to the traditional approach, however, the number of possible positions for intransitive arguments is more than just two. Section 4 presented an implementation of this theory in terms of the diagnostics previously discussed.

Some outstanding issues nevertheless remain. In particular, with regard to the theory of thematic roles presented, the restrictions on possible combinations of roles remains to be fully understood; a better theory of this may help to clear up some outstanding uncertainties in regard to the analysis of the diagnostics. The applicability of the approach adopted to phenomena in languages other than English will also be an interesting avenue to explore. To conclude, however, an approach to split intransitivity based in a hierarchy of multiple thematic functional heads is a promising way of accounting for various behaviours in English, and opens up various possibilities for further research.

References

- Alexiadou, A., E. Anagnostopoulou, and F. Schäfer (2006). The properties of anticausatives crosslinguistically. In M. Frascarelli (Ed.), *Phases of Interpretation*. Berlin: Mouton de Gruyter.
- Baker, J. (2013). *Theoretical approaches to alignment, with special reference to split/fluid-S systems*. Undergraduate dissertation, University of Cambridge.
- Belletti, A. and L. Rizzi (1988). Pysch verbs and θ -theory. *Natural Language & Linguistic Theory* 6(3), 291–352.
- Borer, H. (2005). *The Normal Course of Events*, Volume 2 of *Structuring Sense*. Oxford: Oxford University Press.
- Bošković, Z. and D. Takahashi (1998). The theta system—an overview. *Linguistic Inquiry* 29(3), 347–66.
- Burzio, L. (1981). *Intransitive verbs and Italian auxiliaries*. Ph. D. thesis, Massachusetts Institute of Technology.
- Burzio, L. (1986). *Italian Syntax: a government-binding approach*. Dordrecht: Kluwer Academic Publishers.
- Chomsky, N. (1981). *Lectures on Government and Binding*. Dordrecht: Foris Publications.
- Cinque, G. (1999). *Adverbs and Functional Heads: A Cross-Linguistic Perspective*. Oxford: Oxford University Press.
- Dixon, R. (1979). Ergativity. *Language* 55(1), 59–138.
- Dowty, D. (1979). *Word meaning and Montague Grammar*. Dordrecht: Reidel.
- Embick, D. and R. Noyer (2007). Distributed Morphology and the syntax-morphology interface. In G. Ramchand and C. Reiss (Eds.), *The Oxford Handbook of Linguistic Interfaces*. Oxford: Oxford University Press.

- Freeze, R. (1992). Existentials and other locatives. *Language* 68(3), 553–95.
- Hoekstra, T. (1988). Small clause results. *Lingua* 74(1), 101–139.
- Irube, K. (1984). Argument structure and the out-prefixation. *English Linguistics* 1(1), 105–122.
- Keyser, S. and T. Roeper (1984). On the middle and ergative constructions in English. *Linguistic Inquiry* 15(3), 381–416.
- Kiparsky, P. (1998). Partitive case and aspect. In M. Butt and W. Geuder (Eds.), *The Projection of Arguments*. Stanford: CSLI Publications.
- Legendre, G. (2007a). On the typology of auxiliary selection. *Lingua* 117(9), 1522–1540.
- Legendre, G. (2007b). Optimizing auxiliary selection in romance. In R. Aronovich (Ed.), *Split Auxiliary Systems: A Cross-linguistic Perspective*. John Benjamins: John Benjamins.
- Levin, B. and M. Rappaport (1986). The formation of adjectival passives. *Linguistic Inquiry* 17(4), 623–61.
- Levin, B. and M. Rappaport-Hovav (1995). *Unaccusativity: At the Syntax-lexical Semantics Interface*. Cambridge, Mass.: MIT Press.
- Marantz, A. (1992). The way-construction and the semantics of direct arguments in English: A reply to Jackendoff. In T. Stowell and E. Wehrli (Eds.), *Syntax and Semantics*, Volume 26. New York: Academic Press.
- McCawley, J. (1968). Lexical insertion in a transformational grammar without deep structure. In B. Darden (Ed.), *Papers from the Fourth Regional Meeting of the Chicago Linguistic Society*, Chicago, pp. 71–80. University of Chicago.
- McKoon, G. and T. Macfarland (2000). Externally and internally caused change of state verbs. *Language* 76(4), 833–58.
- Mithun, M. (1991). Active/agentive case marking and its motivations. *Language* 67(3), 510–546.
- Montrul, S. (2005). On knowledge and development of unaccusativity in Spanish L2 acquisition. *Linguistics* 43(6), 1153–90.
- Payne, T. (1997). *Describing Morphosyntax: A Guide for Field Linguists*. Cambridge: Cambridge University Press.
- Perlmutter, D. (1978). Impersonal passives and the unaccusative hypothesis. In *Proceedings of the 4th Annual Meeting of the Berkeley Linguistics Society*, pp. 157–90.
- Ramchand, G. (2008). *Verb Meaning and the Lexicon: A First Phase Syntax*. Cambridge: Cambridge University Press.
- Reinhart, T. (2002). The theta system—an overview. *Theoretical Linguistics* 28(3), 229–90.
- Rizzi, L. (1997). The fine structure of the left periphery. In L. Haegeman (Ed.), *Elements of Grammar*. Dordrecht: Kluwer Academic Publishers.

- Rosen, C. (1984). The interface between semantic roles and initial grammatical relations. In D. Perlmutter and C. Rosen (Eds.), *Studies in Relational Grammar 2*. Chicago: University of Chicago Press.
- Rothstein, S. (2004). *Structuring events: A study in the semantics of aspect*. Oxford: Blackwell.
- Schäfer, F. (2009). The causative alternation. *Languages and Linguistics Compass* 3(2), 641–81.
- Schoorlemmer, M. (2004). Syntactic unaccusativity in Russian. In A. Alexiadou, E. Anagnostopoulou, and M. Everaert (Eds.), *The Unaccusativity Puzzle: Explorations of the Syntax-Lexicon Interface*. Oxford: Oxford University Press.
- Sheehan, M. (to appear). Parameterising ergativity: an inherent case approach. In J. Coon, D. Massam, and L. Travis (Eds.), *The Oxford Handbook of Ergativity*. Oxford: Oxford University Press.
- Smith, C. (1991). *The parameter of aspect*. Dordrecht: Kluwer.
- Sorace, A. (2000). Gradients in auxiliary selection with intransitive verbs. *Language* 76(4), 859–890.
- Sorace, A. (2004). Gradience at the lexicon-syntax interface: Evidence from auxiliary selection and implications for unaccusativity. In A. Alexiadou, E. Anagnostopoulou, and M. Everaert (Eds.), *The unaccusativity puzzle: Explorations of the syntax-lexicon interface*. Oxford: Oxford University Press.
- Tenny, C. (1987). *Grammaticalizing aspect and affectedness*. Ph. D. thesis, Massachusetts Institute of Technology.
- Tomescu, V. (2008). Some remarks on Romanian reflexive verbs derived by the prefix *în*. *Bucharest Working Papers in Linguistics* 1, 87–96.
- Verkuyl, H. (1972). *On the compositional nature of the aspects*. Dordrecht: Reidel.
- Zaenen, A. (1988). Unaccusative verbs in Dutch and the syntax-semantics interface. *CSLI Reports*, 88–123.
- Zhang, J. (2009). A review on the analyses of resultative constructions in English and Chinese. *HKBU Papers in Applied Language Studies* 13, 120–152.