

**Intransitive verb classes in English and the unaccusative hypothesis<sup>1</sup>**

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## ABSTRACT

This article considers, in relation to English, the notion of ‘unaccusativity’ – the idea that there are two classes of intransitive verbs which differ in relation to the underlying positions of their arguments. Various proposed diagnostics for unaccusativity in English are considered systematically with close attention to the membership of the classes of intransitives that each diagnostic identifies, taking Sorace’s (2000) auxiliary selection hierarchy as a starting point. Good correlation with the hierarchy is found in most cases, suggesting that it has cross-linguistic and cross-diagnostic relevance in describing split intransitive patterns beyond those for which it was originally proposed. However, it is also argued on the basis of the same data that the traditional division of English intransitives into just two classes is too simplistic. Adopting an approach similar to that of Ramchand’s (2008) treatment of thematic roles, it is argued that the behaviour of the multiple different classes that can be identified can be linked to the presence or absence of different functional heads encoding the features of initiation, processhood, inherent telicity and change.

## 1. INTRODUCTION

The purpose of this article is to consider, in relation to English specifically, the notion of ‘unaccusativity’ – the idea that there are two classes of intransitive verbs which differ in relation to the underlying positions of their arguments. It has two main aims. Firstly (section 2), I consider systematically the various diagnostics for unaccusativity in English that have been proposed in the literature, with close attention to the membership of the classes of intransitives that each diagnostic identifies. On the basis of this, I secondly (sections 3–5) argue that the traditional division of English intransitives into just two classes is too simplistic, but that the notion that the behaviour of different classes of intransitives can be reduced to differences in their positions of their arguments can be retained, albeit with a more nuanced approach to syntactic argument structure.

The following subsections introduce two notions that are key for the remainder of the article. Subsection 1.1 introduces a standard approach to unaccusativity. Subsection 1.2 then introduces an existing proposal for furthering understanding of unaccusativity, which section 2 will explore in more detail in relation to English.

### 1.1 *Unaccusativity*

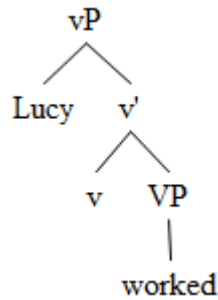
The so-called UNACCUSATIVE HYPOTHESIS was first developed by Perlmutter (1978) in the framework of Relational Grammar. It was later re-expressed in terms of the Government-Binding framework by Burzio (1986) and has received a great deal of attention in the literature, both in relation to English and many other languages.

The core notion of the hypothesis is that in all languages there are two classes of intransitive verbs – UNACCUSATIVES and UNERGATIVES – which differ as regards the underlying position of their single argument. The argument of unaccusatives is at some level like a (direct) object of a transitive verb; the argument of unergatives behaves more like a transitive subject. All intransitives are either unaccusative or unergative.

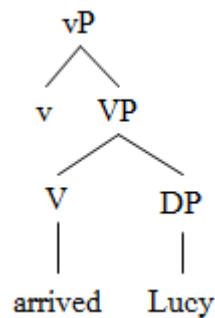
In standard minimalist terms, unaccusatives are said to have an internal argument which is merged as the complement to the lexical verb V (i.e. in the same position as transitive objects). Unergatives have an external argument, first-merged in

the specifier position of vP (as are active transitive subjects). This distinction between the two classes of verbs may be represented as in (1):

(1) (a) Unergatives



(b) 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. The following subsection discusses one particular diagnostic, auxiliary selection, which is found in a range of languages. Specifically, it presents the hierarchy proposed by Sorace (2000) to cross-linguistic patterns in variation in auxiliary selection, which may also be of relevance to diagnostics of unaccusativity more generally. Section 2 then discusses unaccusativity diagnostics which have been proposed for English, in relation to Sorace's hierarchy and more generally.

### 1.2 *The auxiliary selection hierarchy*

Auxiliary selection – variation between BE and HAVE as the auxiliary in the periphrastic perfect – has been taken as diagnostic of unaccusativity in many European

languages (not including present-day English to any significant extent). An example of a language with this sort of variation in auxiliary selection is German:

- (2) (a) Er **ist** gegangen.  
 he is gone  
 ‘He has gone.’
- (b) Er **ist** gelaufen.  
 he is run  
 ‘He has run.’
- (c) Er **hat** gearbeitet.  
 he has worked  
 ‘He has worked.’

Amongst intransitive verbs, BE is prototypically associated with unaccusatives and HAVE with unergatives. However, the details of the variation between BE and HAVE vary between languages. Compare for example the German examples in (2) with the French ones in (3): the languages differ in that in French the verb translated as ‘run’ takes HAVE, though its equivalent in German takes BE ((3b)):

- (3) (a) Il **est** allé.  
 he is gone  
 ‘He has gone.’
- (b) Il **a** couru.  
 he has run  
 ‘He has run.’
- (c) Il **a** travaillé.  
 he has worked  
 ‘He has worked.’

To capture the cross-linguistic patterns in variation of this type, Sorace (2000) proposes an auxiliary selection hierarchy, dividing intransitive verbs into various semantic classes, ordered as shown in Table 1.

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

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Table 1

*The auxiliary selection hierarchy from Sorace (2000)*

In a language with a BE/HAVE auxiliary split, Sorace argues, BE will be found with categories toward the top of the hierarchy and HAVE toward the bottom. The cut-off point on the hierarchy between the two auxiliaries will vary depending on the language. Some categories in certain languages may show variable behaviour, being associated with either BE or HAVE depending on various factors (e.g. lexical idiosyncrasy, telicity); such categories will be ordered in between those exclusively selecting BE and those selecting HAVE. Where the strength of speakers' judgements as to the grammaticality of BE or HAVE varies, there will be a gradient effect: judgements will be strongest toward the top and the bottom of the hierarchy, and weaker in the middle.

An important distinction made by Sorace is between PROCESS verbs (uncontrolled and controlled processes, the latter being further divided into motional and non-motional categories) and others. Process verbs are those which denote neither an inherent change (of state or location) or a state (Sorace 2000: 862). Importantly change of location verbs like *go, come, arrive, fall* etc. are not included in the process category, in spite of semantic similarities to controlled motional processes like those denoted by *swim, run* and *walk*. The difference between these categories is that the change of location inherently specify an endpoint, while the controlled motional processes do not: the change of location verbs are inherently telic, whilst the process verbs are atelic by default. Additionally, whilst the change of location verbs necessarily specify 'inherent displacement' (Legendre 2007), it is possible to use the controlled motional processes in contexts where there is no spatial displacement at all:

- (4) (a) Lucy is running on the spot.  
 (b) Harry swam with all his might but the current was so strong he stayed exactly where he was.

Compare:

- (5) \*Lucy is going/coming/arriving on the spot.

Differences, cross-linguistically and language-internally, between the auxiliary selection behaviours of these two classes motivates Sorace's decision to treat them separately. The two classes also show distinct behaviour as concerns unaccusativity diagnostics in English, as shall be illustrated in section 2.

A class of verbs considered by Sorace (2000: 871–3) but not separately included by her in the hierarchy are the ANTICAUSATIVES: verbs with a transitive alternant expressing causation. (A few verbs that are anticausative in English although not necessarily in other languages are included by Sorace in the change of state class: *grow*, *decay*.) The anticausative alternation is seen in the following examples:

- (6) (a) Albert froze the ice cream.  
 (b) The ice cream froze.
- (7) (a) Jennifer grew a daffodil.  
 (b) The daffodil grew.

These verbs denote changes of state. As shall be seen in section 2, however, anticausative verbs often exhibit different behaviours from other change of state verbs in English and are worth considering separately. Anticausative verbs seem to further divide into two groups – verbs like *melt* and *burn* on one hand and *break* and *tear* on the other (Ramchand 2008: 85–6, 108) – which show different behaviours in some respects and hence will be considered separately.

Sorace (2000: 887, 2004: 268) emphasises the need for further research into the question of whether or not the auxiliary selection hierarchy might have wider relevance to other diagnostics of unaccusativity, including languages where auxiliary selection is not a diagnostic. The prediction is that verbs towards the top of the hierarchy will be those which are diagnosed as unaccusative, and those toward the bottom those diagnosed as unergative. Where there is variation within a semantic category, or speakers' judgements are weaker, this will tend to occur in the middle of the hierarchy, in between those categories which return clear-cut unaccusative and unergative judgements.

Some evidence in support of the wider applicability of the hierarchy from Italian, French and Japanese is provided by Sorace (2004: 263–4). Montrul (2005) also finds evidence from Spanish, and Baker (2013) finds that in some (though not all) languages with a split amongst intransitive verbs instantiated in terms of case or agreement there is a correlation with Sorace's hierarchy. Adding further to this work, the following section will consider the auxiliary selection hierarchy in relation to various proposed unaccusativity diagnostics for English.

## 2. DIAGNOSTICS OF UNACCUSATIVITY IN ENGLISH

A number of diagnostics have been proposed in the literature as allowing intransitive verbs in English to be identified as either unergative or unaccusative. The purpose of this section is to consider these diagnostics in two ways: firstly, to consider each diagnostic in relation to a sizeable sample of verbs to give a clear idea of exactly which verbs are identified by it; secondly, and relatedly, to see if there is any relation between the class of verbs identified by each diagnostic and Sorace's (2000) auxiliary selection hierarchy, discussed in the preceding section.

The verbs considered are primarily those discussed by Sorace (2000) in relation to their cross-linguistic auxiliary selection behaviour: around 30 in total, from a wide range of semantic classes, and including anticausative verbs. A few verbs discussed by Sorace which in English are either not strictly intransitive (e.g. *please*, *rain*)<sup>2</sup> or are phrasal in nature (e.g. *be born*, *catch on*) are not considered.



These findings are discussed below; the Appendix to this article details the results for each individual verb considered for each diagnostic. Judgements are the author's own; naturally, other speakers' judgements may differ in some individual cases, although I am confident that the overall generalisations made probably still hold widely across English speakers.

Consideration of certain diagnostics suggests these do not in fact relate to unaccusativity or argument structure at all; these are discussed in subsection 2.1. Once these purported diagnostics are excluded, four main groups of diagnostics seem to emerge (three of these four groups have only one member):

- (i) Diagnostics primarily, though not exclusively, picking out Sorace's process verbs: *V one's way into*, *V-ing away*, cognate objects, suffix *-er*, prefix *out-*. (These are discussed in subsection 2.2.)
- (ii) Diagnostic picking out verbs which are not inherently telic: *for hours*. (Subsection 2.3.1.)
- (iii) Diagnostic picking out verbs which lack an Initiator: the resultative construction. (Subsection 2.3.2.)
- (iv) Diagnostic picking out Sorace's change verbs (change of location, change of state): prenominal past participles. (Subsection 2.3.3.)

I discuss these in turn in the following subsections, but first I treat those constructions which are perhaps not actually diagnostic of unaccusativity.

### 2.1 *Illusory 'diagnostics'*

Locative inversion and *there*-insertion constructions, exemplified in (8–9), have been associated with unaccusativity by various authors (see Levin & Rappaport Hovav 1995: 19). However, as can be seen from the examples, these constructions occur with verbs ranging widely across Sorace's hierarchy, including verbs which are usually considered prototypical unergatives:

- (8) (a) Into the station came a train.

- (b) In the room remained three people.
  - (c) In that office worked an elderly professor.
- (9)
- (a) There came a train.
  - (b) There remained three people.
  - (c) There ran into the house a woman.
  - (d) There play two major football teams in Manchester: United and City.

Levin & Rappaport Hovav (1995: chapter 6), in their discussion of locative inversion, come to the conclusion that it is not truly related to argument structure but rather can be attributed to discourse function. They do not consider *there*-insertion systematically, but speculate that as a manifestation of what they call ‘surface unaccusativity’ (like locative inversion) it and all other such manifestations may not be true diagnostics of unaccusativity either (p. 277). Ramchand (2008: 78, fn. 6) makes the same assumption about *there*-insertion. Given the lack of correspondence with Sorace’s hierarchy and the occurrence of these constructions with prototypical unergatives like *work* and *play*, it seems likely that this analysis is the correct one – particularly as in the locative inversion case at least an alternative analysis does exist. Subsequently therefore I leave these ‘diagnostics’ aside.

## 2.2 *Process diagnostics*

### 2.2.1 ‘*V one’s way into*’

The *V one’s way into* (discussed as an unaccusativity diagnostic by Marantz 1992) is clearly permissible with process verbs:

- (10)
- (a) Julian worked his way into parliament.
  - (b) Lucy ran/coughed her way into the house.

It is also possible to construct examples with certain other intransitive verbs which seem to more sporadically allow this construction:

- (11) (a) The stranded man survived his way into the record books.  
 (b) The creeper grew its way into the house.  
 (c) The balloon rose its way into the sky.  
 (d) ?Lucy died her way into heaven.

In general, however, this construction is most clearly grammatical only with process verbs: i.e. only with those verbs at the bottom end of Sorace's hierarchy.

### 2.2.2 '*V-ing away*'

The *V-ing away* construction is another proposed diagnostic (Ian Roberts, p.c.). It too can occur with any of Sorace's process verbs:

- (12) Lucy was working/swimming/coughing away.

It may also be able to occur with some other intransitive verbs (doubtfully in some cases):

- (13) (a) Harry was freezing away outside.  
 (b) Jennifer was surviving away.  
 (c) ?The tree was growing away in the garden.

These verbs are mostly of the continuation of state and anticausative categories. Whilst there is some correlation with the hierarchy, therefore, it is not absolute.

### 2.2.3 *Cognate objects*

Certain verbs are able to take cognate objects, based on the same morphological root and typically adding little or nothing to the meaning of the clause in themselves. The cognate object construction is traditionally considered diagnostic of unergatives (Levin

& Rappaport Hovav 1995: 40). It seems to be most easily acceptable with controlled motional processes:

- (14) (a) Lucy walked the walk.  
 (b) Joe ran a run.

With controlled non-motional processes the construction seems more restricted. *play a play*, for example, cannot refer to any act of playing, but only to particular senses: a theatrical production or a particular action in a sporting context. Similar remarks may be made of *work a work* and *talk a talk*. This is notable as the non-motional processes are closer to the ‘unergative’ end of Sorace’s hierarchy than the motional processes.

Uncontrolled processes – which are a little further toward the ‘unaccusative’ end of the hierarchy than the controlled processes – show mixed behaviour; for some cases my judgements are uncertain:

- (15) (a) cough a cough  
 (b) ?tremble a tremble  
 (c) \*skid a skid

With non-process verbs, including anticausative verbs – i.e. those verbs closer to the unaccusative end of the hierarchy – the construction is generally ungrammatical: \**come a coming*, \**arrive an arrival*, \**grow a growth*, \**rot a rotting*, \**break a breaking*, \**survive a survival*, \**belong a belonging* etc. An exception to this generalisation is *die a death*. In general, however, this diagnostic behaves largely (although not perfectly) as might be predicted by Sorace’s approach.

#### 2.2.4 Suffix ‘-er’

The agentive suffix *-er* can occur generally with transitive verbs and with certain intransitive verbs (Burzio 1981: 255–8). It is acceptable with all process verbs:

- (16) (a) worker, player, talker ...  
 (b) swimmer, runner, walker ...  
 (c) trembler, cougher, skidder, rumbler ...

Otherwise the *-er* suffix is found only sporadically. Apart from *survivor* and *leaver*, which are verbs also used as transitives and therefore may not qualify, it occurs in a few phrasal forms like *all comers*, *early riser*, *late riser*, *stayer at home*, *long laster* (the last referring for example to vegetables). Additionally, the Oxford English Dictionary includes entries – all for the meaning ‘one who Vs’ – for *comer*, *arriver*, *faller*, *dier*, *riser*, *stayer*, *remainder*, *laster*, *persister*, *sitter* and *seemer*, and also (though listed as ‘obsolete’) *belonger* and *beer*. However, most of these forms seem extremely marginal in acceptability. Whilst *-er* is also found with anticausative verbs (*freezer*, *burner* etc.), this derivation seems generally to be based on the transitive alternant: *freezer* means ‘thing that freezes<sub>trans</sub>’, not ‘thing that freezes<sub>intrans</sub> / is frozen’.

To summarise, *-er* with intransitives is primarily limited to process verbs; while it is also found with some other verbs (more widely than the constructions discussed above), such formations are more restricted than those with process verbs and there does not seem to be any particularly systematic pattern.

### 2.2.5 Prefix ‘out-’

The morphological process of *out-* prefixation is another than occurs with only a subset of intransitives (Keyser & Roeper 1984: 393–5). with most process verbs. It is perhaps more easily accepted as grammatical with controlled rather than uncontrolled processes:

- (17) Lucy outworked/outran/?outcoughed/?outtrembled Harry.

At the opposite end of Sorace’s hierarchy, *out-* prefixation is clearly ruled out with change of location verbs: \**outcome* (in a verbal sense), \**outarrive*, \**outfall* etc. With intermediate categories more mixed behaviours are observed. Some forms like *outgrow* (change of state), *outstay*, *outlast* (continuation of state) seem clearly acceptable; others are more doubtful (e.g. ?*outrise*, ?*outsurvive*, ?*outsit*, ?*outfreeze*,

?*outburn*) and others appear to be ruled out altogether (\**outdie*, \**outhappen*, \**outbreak*, \**outremain*, \**outbe*, \**outbelong*). This gradient behaviour along the hierarchy – from categories where the formation is acceptable with all verbs, through those where it is more sporadically and/or doubtfully acceptable, to those where it is not acceptable at all – is the sort of pattern that Sorace’s approach predicts.

### 2.3 Other diagnostics

#### 2.3.1 ‘for hours’

Clauses can occur with the adverbial *for hours* when they are atelic; this is held to diagnose the unergative class (Schloorlemmer 2004: 227). In some cases, to get a pragmatically plausible sentence, it may be necessary to substitute *for hours* with *for seconds*, *for years* etc.

This construction is acceptable with all intransitives except those in Sorace’s change of location class, and a few others:

- (18) (a) Lucy worked/swam/trembled/stayed for hours.  
 (b) \*Lucy arrived/left/died for hours.

There also appears to be a split amongst the two classes of anticausatives:

- (19) (a) The fire burned for hours.  
 (b) \*The window broke for hours.

The overall generalisation is that *for hours* is usually ruled out with verbs which are inherently telic. Where it does occur, an additional meaning is typically forced on the sentence e.g. *Lucy came for hours* (= ‘Lucy came, and stayed for hours’), *the guests arrived for hours* (separate guests individually arrived over a period of hours). There is therefore good correlation with Sorace’s hierarchy: it is only with those verbs towards the top of the hierarchy that the construction is (in general) ruled out.

### 2.3.2 Resultatives

The resultative construction, discussed as a diagnostic of unaccusativity by e.g. Levin & Rappaport Hovav (1995: chapter 2). Informally, resultatives denote a change with an end state affecting an argument expressed through an adjective or prepositional phrase. As employed with intransitives, this construction does not show any real correlation with Sorace's hierarchy. Rather, it seems almost explicitly to pick out verbs which also undergo the anticausative alternation:

- (20) (a) The lake froze solid / froze to ice.  
 (b) The wood burned black / burned to a cinder.  
 (c) The child grew tall.  
 (d) ?The butter melted soft.

However, anticausatives of the *break*, *tear* class do not seem to allow resultatives where the state is expressed by an adjective, although they do although those where the state is expressed as a PP:

- (21) The window broke into pieces.

There are a limited number of cases where this construction occurs with verbs which do not undergo the anticausative alternation:

- (22) (a) The light blinked out.  
 (b) The flowers blossomed white.

These verbs, like the anticausatives, denote changes of state.

Some verbs – *become*, *stay*, *remain*, *be*, *seem* – allow a construction that is superficially the same as the resultative construction, with a postverbal adjective denoting the state of the subject:

- (23) Lucy became/stayed/remained/was/seemed tired.

In only one of these cases is there an argument that the state described by the adjective is the *result* of what is described by the verb – *become*, a change of state verb. I will not count the others as permitting the resultative construction, therefore, despite the superficial similarities, and even in the case of *become* the question of whether this is a true resultative remains open: unlike the other verbs, it requires an adjectival (or nominal) complement.

Given the close connection between the anticausative class and those intransitive verbs which permit the resultative construction, it seems reasonable to assume that the same property may be responsible for both. A candidate for such a property may be found in Ramchand (2008). Ramchand suggests (p. 86) that the anticausative class can be defined as precisely those intransitives which lack an INITIATOR thematic role, i.e. an argument responsible for the ‘causational or initiational state that leads to the process’ (p. 40). Thus for example, *The wood burned* differs from *Lucy arrived* or *Lucy ran* in that the subject initiates the action in the first but not the second and third examples.

Accordingly, we may also take the absence of an Initiator to be a defining characteristic of intransitive verbs which allow the resultative construction, although it is not possible with all such verbs (specifically not with those which are inherently telic). Verbs like *blink* and *blossom* can also be seen as lacking an Initiator; I leave aside the question of why they do have transitive alternants.

### 2.3.3 *Prenominal past participles*

Transitive verbs may allow their past participle forms to modify nouns: *the chosen leader*, *the freed slave*, *the ruined city* etc. In each case the noun in question would be a patient in the equivalent verbal construction.

This construction also occurs with some intransitive verbs (Levin & Rappaport 1986: 654). Specifically, it appears to occur with verbs denoting change of location or state, i.e. the verbs at the very top of the hierarchy:

(24) (a) fallen leaves



- (b) a decayed corpse
- (c) a grown woman

The construction also occurs with anticausatives, though this could of course be based on the transitive alternant:

- (25) (a) the frozen water  
 (b) the broken window

However, even amongst these verbs, this construction is limited by other factors. (24a, c) may be acceptable, but *\*the fallen cat* and *\*a grown tree* are not. *fallen man* refers only to a spiritual state and not, say, to a man who has fallen out of a window. Note also the following pair:

- (26) (a) the recently arrived recruits  
 (b) \*the arrived recruits

Other verbs (e.g. *come, go, happen*) do not seem to allow the construction at all.

#### 2.4 Summary

Two main results arise from this analysis in this section. Firstly, most of the diagnostics show some correlation with Sorace's (2000) auxiliary selection hierarchy, though this is not true in every case, and there are various complications. In general, however, there is support for the wider cross-linguistic, cross-diagnostic applicability of the hierarchy.

Secondly, it can be observed that the diagnostics differ in which classes of intransitives they pick out. There is no pair of diagnostics that pick out two mutually exclusive classes of verbs without leaving a large number of verbs unclassified; if the unaccusative hypothesis holds, therefore, at least one of the two classes of intransitives (unergatives, unaccusatives) cannot be positively identified by a single diagnostic. In section 3, I consider these matters in more detail, arguing that the traditional binary division of intransitives into unergatives and unaccusatives is unsatisfactory.

Subsequently, in section 4, I argue for an alternative approach, which posits a greater range of possible argument positions.

### 3. RAMIFICATIONS FOR THE UNACCUSATIVE HYPOTHESIS

In this section I would like to present some arguments against the unaccusative hypothesis in its traditional form, drawing on the English data presented above. Firstly, I would like to suggest that, ideally, the diagnostics for the unaccusative and unergative classes should have the following properties:

- (i) Each verb in a class should be identified by at least one diagnostic for that class, and therefore there should be no intransitive verbs not identified by at least one diagnostic for one class or the other.<sup>3</sup>
- (ii) Where there are multiple diagnostics for a class, there should be some overlap in the set of verbs they identify. This lends credence to the case that we really are dealing with the same underlying phenomenon.
- (iii) The diagnostics for one class should not identify any verbs from the other class. (It may be that some verbs do pass diagnostics for both classes, but in this case we expect there to be a clear semantic difference, relating to thematic properties, between the ‘unergative’ usage and the ‘unaccusative’ one.)

In what follows I compare these idealised properties with what we actually find when we consider the diagnostics analysed in section 2.

Firstly, consider the diagnostics traditionally identified with unaccusative verbs: the resultative construction and prenominal past participles. These diagnostics do appear to overlap, insofar as verbs which allow the resultative construction also allow prenominal past participles (though recall that these could be based on the transitive alternant). Likewise, there is considerable overlap between many of the traditional unergative diagnostics, specifically those which primarily pick out the ‘process’ verbs (*V-ing away*, suffix *-er* etc.). All of the process verbs seem to be picked out by at least one of these diagnostics.

However, taking only these diagnostics leaves us with a considerable residue of unclassified verbs. Firstly, as has been shown, the prenominal past participle diagnostic does not appear to pick out all the verbs in the change of location and change of state categories – nearly all of which are not picked out by the resultative diagnostic either. Yet these verbs (*come, go, die* etc.) are usually considered archetypal unaccusatives. Secondly, there are two classes of verbs – the continuation of state and existence of state categories, including verbs like *stay, remain, be, belong* etc. – which are not identified by either the unaccusative or the ‘process’ diagnostics.

The problem of the residue can be largely (though not entirely) overcome by counting the *for hours* construction as diagnostic of unergatives. But this introduces a new issue of unwanted overlap between the unergative and unaccusative diagnostics: several of the verbs identified by the *for hours* diagnostic are those which have been identified as unaccusative on the basis of other diagnostics: this group includes *rise* and *decay* (which also allow prenominal past participles) and the verbs which undergo the anticausative alternation (which allow the resultative construction). If *for hours* is dismissed as a diagnostic – it could be argued for example that telicity does not directly contribute to a verb’s unaccusative status in English – the problem of the residue remains. Furthermore, even the ‘process’ diagnostics are more sporadically acceptable with verbs otherwise identified as unaccusative, as shown by constructions like *all comers, die a death, decaying away, the decayed corpse* etc.

In summary, therefore, it does not appear possible to even come close to meeting the ideal requirements for unaccusativity diagnostics with those which have been proposed for English. One solution to this issue might be to abandon any notion that verbs need to be identified positively as allowing a particular diagnostic construction at all: that, for a verb to be classified as unaccusative, it is sufficient that it fail the unergative diagnostics, or at least a subset of them. But this is still inadequate. As just mentioned, some apparent ‘unaccusatives’ do pass some ‘unergative’ tests – indeed every ‘unergative’ test is passed by at least some ‘unaccusatives’ (meaning that even to select just a subset of such diagnostics as relevant does not overcome the problems). Conversely, not all ‘unergatives’ are picked out by every unergative diagnostic.

It might also be suggested that the diagnostics for ‘true’ unaccusativity be identified by demonstrating parallels between the intransitive arguments they pick out

and the ‘external’ or ‘internal’ arguments of transitive verbs. But three separate groups of diagnostics do this: the ‘process’ diagnostics demonstrate parallels between intransitive arguments and transitive subjects (as for example in (25)), the resultative construction can denote an end-state either of an intransitive argument or a transitive object ((26)) and prenominal past participles describe what in the equivalent clausal construction would again be either an intransitive argument or a transitive object ((27)).

- (25) (a) intransitive: *talker*  
 (b) transitive: *destroyer* (‘one who destroys’, not ‘one who is destroyed’)
- (26) (a) intransitive: *The lake froze solid.*  
 (b) transitive: *Lucy froze the ice cream solid.*
- (27) (a) intransitive: *a grown man*  
 (b) transitive: *a destroyed city*

All three of these, then, demonstrate parallels between intransitives and transitives that seem to relate to argument structure, so all are candidates for determining true unaccusativity – with no principled way of choosing between them. This path of inquiry, then, is another dead end.

I will conclude this section by discussing some further objections to the binary classification of intransitives. Firstly, it falls a long way from capturing the variation between the different groups of verbs as regards the diagnostics: in particular the variation amongst the members of the ‘unaccusative’ class. Secondly, it can be observed that each of the diagnostics seems to pick out a more-or-less semantically coherent set of verbs without any need for additional ‘unaccusative’/‘unergative’ properties. It is arguably redundant to stipulate these properties when the observed behaviour can be adequately described without them.

Finally, it is worth stressing that the need to pick out classes as definitely as possible is an acquisitional issue as well as a theoretical one. This is particularly the case given the apparent cross-linguistic variation in the make-up of the unergative and unaccusative classes (assuming they exist): the membership of the classes, for at least

some verbs, would appear to be something which has to be learned (in addition to Sorace 2000, see Rosen 1984 on this issue of cross-linguistic variation). This matter is compounded by the fact that the diagnostics which can be used to distinguish between the classes are, for the most part, very far from frequently occurring in actual speech (suffix *-er* may be the biggest exception here; it is also one of the forms which can occur with the least semantically consistent group of verbs). Given this, to rely so much on the absence of positive evidence of occurrence with a construction to allow the classification of a verb would seem like a poor acquisition strategy, and one that is unlikely to meet with much success.

In summary, therefore, there are various issues with the unaccusative hypothesis in its traditional form, at least as far as English is concerned. The following section will present a new analysis which aims to overcome these issues.

#### 4. AN ALTERNATIVE ANALYSIS

In this section I will firstly (subsection 4.1) propose a number of intransitive classes, going beyond the traditional two-way distinction, on the basis of the diagnostics discussed in section 2. Then (subsection 4.2) I will present a way in which the behaviour of these classes can be captured in terms of functional structure, and (subsection 4.3) some advantages of this approach. In section 5 I will sketch how this structure may capture the different behaviours of the various diagnostic constructions.

##### 4.1 *Classes of intransitives*

Once we consider all the diagnostics presented in section 2 together, we find we have no fewer than six classes of intransitive verbs, as summarised in Table 2 (abstracting away from apparently exceptional behaviour of certain verbs within Sorace's semantic categories):

	process	inherently telic	initiated	change
<i>A. arrive, die ...</i>	–	+	+	+

<i>B. rise, decay ...</i>	–	–	+	+
<i>C. melt, burn ...</i>	–	–	–	+
<i>D. break, tear ...</i>	–	+	–	+
<i>E. stay, be ...</i>	–	–	+	–
<i>F. tremble, swim, work ...</i>	+	–	+	–

Table 2

*The six classes of verbs identified by the diagnostics*

Each of these six classes differs from at least one other class in only one feature: for example, class A differs from class B in terms only of [ $\pm$ (inherently) telic], class E differs from class F only in terms of [ $\pm$ process], etc.

It is worth asking if these four features might potentially combine to create any other classes. The maximum number of notionally possible classes is sixteen, but some of these seem to be ruled out by independent factors. For example, we have defined ‘process’ so as to exclude verbs of change, so [+process] verbs will always be [–change], and [+change] verbs will always be [–process]. It also appears (whether this is a universal or an idiosyncrasy of English remains to be seen) that [+process] verbs are always [–inherently telic, +initiated].<sup>4</sup> Further, only [+change] verbs ever seem to be inherently [+telic].

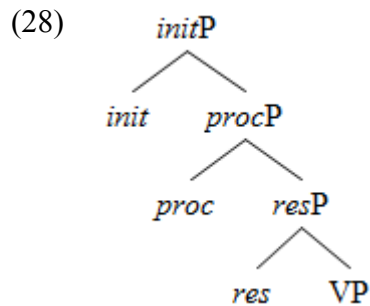
Once all this is considered, only one potential class not identified in Table 2 remains: [–process, –inherently telic, –initiated, –change] (non-initiated state). Here I will follow Ramchand (2008: 78, 106) in assuming that stative verbs always have an initiator. On this view, this class is not, in fact, instantiated in English.<sup>5</sup>

In what follows I argue that the existence of these classes can be captured in terms of a functional hierarchy.

#### *4.2 Intransitive classes and functional structure*

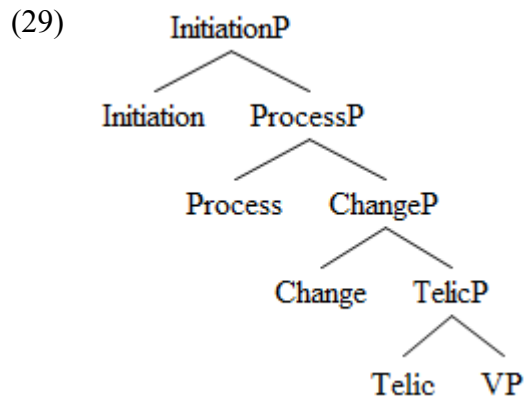
Various authors (e.g. Bowers 1993, Borer 2005, Ramchand 2008) have adopted an approach to clausal structure in which even DPs traditionally analysed as being base-generated in complement positions have instead been analysed as being first-merged in

specifier positions (e.g. of various functional heads). Ramchand (2008), for instance, posits three heads in the thematic domain which she calls *init*, *proc* and *res*:



Ramchand's analysis is intended to capture the different thematic roles which an argument DP may be associated with. A DP may have multiple roles depending on which positions it is merged into (whether by internal or external merge). For example, a DP in Spec,*initP* has the role INITIATOR, one in Spec,*procP* has the role UNDERGOER and one in Spec,*resP* has the role RESULTEE. The argument of a verb such as *jump* is an INITIATOR-UNDERGOER-RESULTEE (i.e. it is merged successively in the specifiers of all three of *resP*, *procP* and *initP*); the argument of *run* is both an INITIATOR and an UNDERGOER (merged in Spec,*procP* and Spec,*initP*); the argument of *freeze* is only an UNDERGOER (merged only in Spec,*procP*), and so forth.

Quite apart from any other arguments against the division of intransitives into just two classes, this type of approach to argument structure (with more than just two possible intransitive argument positions) renders the unaccusative hypothesis untenable in its traditional form. I propose that a similar approach may also account for the multiple different classes of intransitive verbs identified above, and also the ways in which the behaviour of the arguments of these verbs parallels that of certain transitive arguments. Specifically, I propose that each of the features [process], (inherent) [telicity], [initiation] and [change] may be associated with its own functional head. Taking my lead from Ramchand (2008), I propose the following hierarchical ordering of these heads:



For concreteness I adopt an order of heads based on that of Ramchand ; see the discussion below for how my heads relate to Ramchand's. Following Ramchand, I also assume that these heads are only present in constructions which are, respectively, [+initiated], [+process], [+change] or [+inherently telic],<sup>6</sup> and that if a head is present in an intransitive then the argument is merged in its specifier (there may possibly be exceptions to this in cases where that position is occupied by some other element).

My Initiation head is directly based on Ramchand's *init*, defined as 'the outer causal projection that introduces the external argument' (Ramchand 2008: 39), which 'exists when the verb expresses a causal or initiational state that leads to the process' (p. 40); its presence/absence determines the anticausative alternation (p. 86). The relation of *proc* to the heads I have proposed is more complex. Ramchand defines *proc* as the head which 'represents the dynamic process' (2008: 39) 'represents change through time, and [...] is present in every dynamic verb', and 'specifies the nature of the change or process' (p. 40). Note, then, that Ramchand's *proc* may be present with verbs denoting change, in contrast to Sorace's 'process' which excludes verbs of change. Thus, for Ramchand, verbs like *arrive* and *freeze* (which are [-process] on the approach taken here) do have a *proc* component (p. 108). In essence, it seems Ramchand's single head *proc* corresponds to two heads on my analysis: Process and Change.

Ramchand's *res* 'only exists when there is a result state explicitly expressed by the lexical predicate' and 'gives the "telos" or "result state" of the event' (Ramchand 2008: 40). It does not relate to telicity directly: the status of a clause as telic or atelic can be expressed through other means (e.g. through auxiliaries, DPs and PPs). Intransitive verbs that are associated with a *res* projection include verbs like *arrive* and *jump* and some anticausatives (e.g. *break*, *tear*), while *res* is not found with other anticausatives



(e.g. *melt*, *roll*) and verbs like *run* (Ramchand 2008: 108). Ramchand (2008: 80–81) assumes that the *run* class (semelfactives or punctual intransitives), which also includes verbs like *hiccough* and *trip*, are essentially telic verbs which gain their atelic readings through ‘S-summing’, as argued by Rothstein (2004). It is only in these atelic readings that they can occur with durative phrases like *for hours*.

Here, for the purpose of simplicity, I will continue to assume that the semelfactive verbs are not [+inherently telic] – Smith (1991), as referenced by Ramchand (2008: 80), makes a similar claim. This allows my Telic head to be equated with Ramchand’s *res*. It may be, however, that Rothstein and Ramchand are right, and such verbs are in fact inherently telic but this can be overridden, and it is only then that they satisfy the *for hours* diagnostic of telicity: I leave this matter aside.

#### 4.3 Advantages

I contend that this analysis overcomes many of the problems with the traditional two-class analysis, and is therefore preferable to it. Here I lay out some arguments in this direction.

Most clearly, the analysis in terms of the four features proposed captures the variations in behaviour amongst intransitives more closely than the two-class analysis. It also allows each diagnostic to be explained as affecting a more-or-less semantically coherent group of verbs.

This system is also perhaps acquisitionally more plausible than that based on the requirement that learners sort intransitive verbs into only two categories (unaccusatives and unergatives) on the basis of limited evidence. Plausibly the learner may independently be making the division of verbs into these categories on the basis of semantic properties and the need to determine the thematic roles of their arguments. Additionally the behaviours associated with each class can be acquired on the basis of positive evidence: there is no need for learners to classify verbs as ‘unaccusative’ based merely on the fact that they do not appear to occur with the constructions diagnostic of unergativity (even leaving aside the fact that some of them do, and the other complications previously discussed).

The class of statives, admittedly, remains as one for which there may be an absence of positive evidence. But this is a small, semantically coherent class, many (perhaps most) of whose members are very frequently occurring: for a learner to identify it is a less daunting task than having to identify the class of unaccusatives. Additionally, the learner is not ascribing any particular behaviours to the stative class: rather, behaviours are assigned to other classes and the statives merely happen not to belong to any of them. To posit an unaccusative class, however, *is* to positively assign it particular behaviours: at the very least, the behaviour of having an internal rather than an external argument. 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, the expression of a single invariant state, should be in some sense the ‘default’.

To conclude, this analysis has many advantages over the previous. To demonstrate this further, in the following section I will sketch the ways in which the functional hierarchy presented in (29) leads to the behaviours found with the different constructions discussed in section 2.

## 5. THE FUNCTIONAL HIERARCHY AND THE DIAGNOSTICS

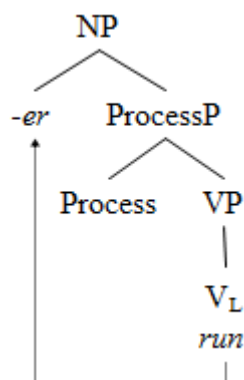
If the approach to the different classes of intransitives in terms of a hierarchy of functional heads as presented in (29) is correct, the behaviour of the different diagnostic constructions should fall out of the sensitivity of these constructions to these heads. That is, if a diagnostic picks out only process verbs (*work, run, cough* etc.), this is because it is in some way sensitive to the Process head, and so on for the other categories.

In this section I briefly present analyses for each of the diagnostic constructions. Given the constraints of space, I do not intend to provide an unassailable analysis of each construction, merely sketch out some of the ways in which such analyses may proceed. I deal with first with those diagnostics which involve morphological derivations, then those constructions involving argument structure alternations, and finally those constructions which remain.

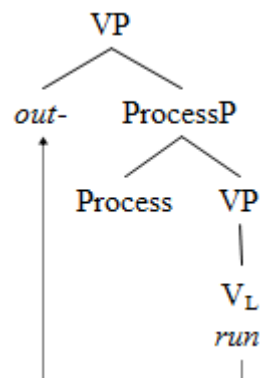
### 5.1 Morphological derivations

The morphological derivations are perhaps most easily dealt with. Starting with the diagnostics associated with process verbs – suffix *-er* and prefix *out-* – one possible analysis is that these are respectively N and V heads which select ProcessP complements containing the lexical verb  $V_L$ .  $V_L$  then combines with the affixes via head movement:

(30) runner



(31) outrun



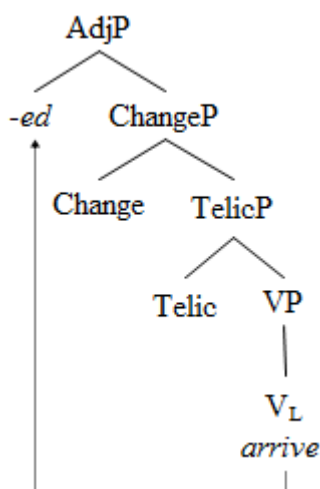
Prefix *out-* also involves an argument structure alternation; this will be dealt with below. Assuming transitive verbs in general also occur with ProcessP projections, they should also be able to occur with these affixes, as is indeed the case.

Various [-process] verbs also occur with one or both of the *-er* and *out-* constructions. The explanation for this may simply be that these are morphological

relics of a time when these affixes could occur with a wider range of verbal roots, though this of course would benefit from further in-depth investigation.

With the prenominal past participle construction, an analysis along the same lines to that above is that an Adj head (realised by default as *-ed*, except with verbs which have separate past participle forms) selects a ChangeP as its complement and again attracts  $V_L$ :

(32) the recently **arrived** recruits



Prenominal past participles can also be formed from transitive verbs; the same analysis – incorporation of ChangeP and  $V_L$  into the *-ed* head – may also apply. This suggests that the direct objects of transitive verbs – or at least of those which allow this construction – are, like the arguments of the intransitives which allow it, merged in the specifier of ChangeP. More work on argument positions in transitive verbs under this model is needed, however.

## 5.2 Argument structure alternations

There are four diagnostics involving alternations of argument structure: *out-* prefixation, *V-ing away*, *V one's way into* and cognate objects. These all affect process verbs, and (apart from the cognate object construction) also affect verbs which are otherwise transitive.

I have not presented a fully worked-out theory of argument structure in transitives and do not intend to do so at present, as this is not the main focus of this article. For present purposes I shall assume (following Borer 2005 and Ramchand 2008) that the direct objects of transitive verbs are first-merged in the specifier of some head lower than Initiation.

The *V-ing away* construction removes such an argument. This is of course only visible with otherwise transitive verbs, with which the construction also occurs:

- (33) (a) Arthur was building a castle.  
 (b) Arthur was building away (\*a castle).

The argument which would otherwise be the direct object can only surface as an oblique:

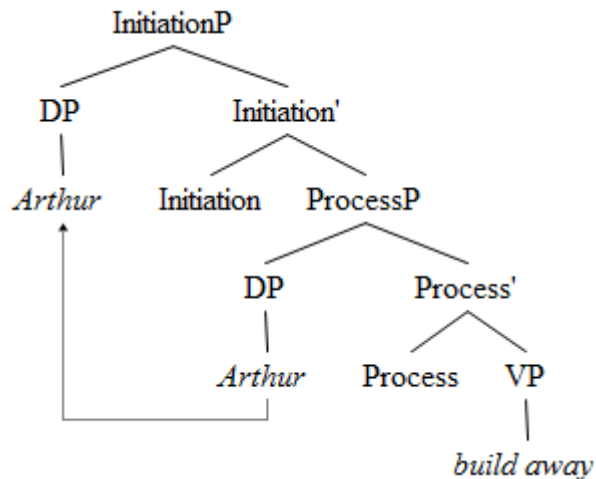
- (34) Arthur was building away at a castle.

Assuming the object of transitives, as before, to be in Spec,ChangeP, we can understand this construction in terms of the removal of a Change projection and its argument, and the addition of the particle *away*. This may explain why the construction is primarily limited to process verbs: since most intransitive verbs seem to have *either* a Change projection *or* a Process projection, if the alternation were to affect most non-process intransitives the resulting clause would be semantically uninterpretable (a verb like *arrive* or *decay* cannot be [-change], so a Change projection is required). Additionally, in many cases there would be simply no argument left, and with a small number of lexical exceptions English does not seem to tolerate verbs without arguments – compare the fact that the passive construction cannot operate on intransitives in English.

*V-ing away* does, however, occur with certain non-process verbs, most notably with certain continuation of state verbs like *survive* and *last*. This may, in fact, be support for analysis just given: these verbs also lack a Change projection. More research is needed on the details, however.

The structure for this construction is thus something like the following (leaving aside matters of movement out of the thematic domain and inflection, and making the assumption that *away* is within the VP):

(35) Arthur was building away



*out-* prefixation, *V one's way into* and the cognate object construction are the converse of *V-ing away*: they all involve the addition of an argument. This is illustrated by the following examples, all employing the usually intransitive verb *run*, with the added argument in bold:

- (36) (a) Harriet outran **Frank**.  
 (b) Harriet ran **her way into the house**.  
 (c) Harriet ran **a run**.

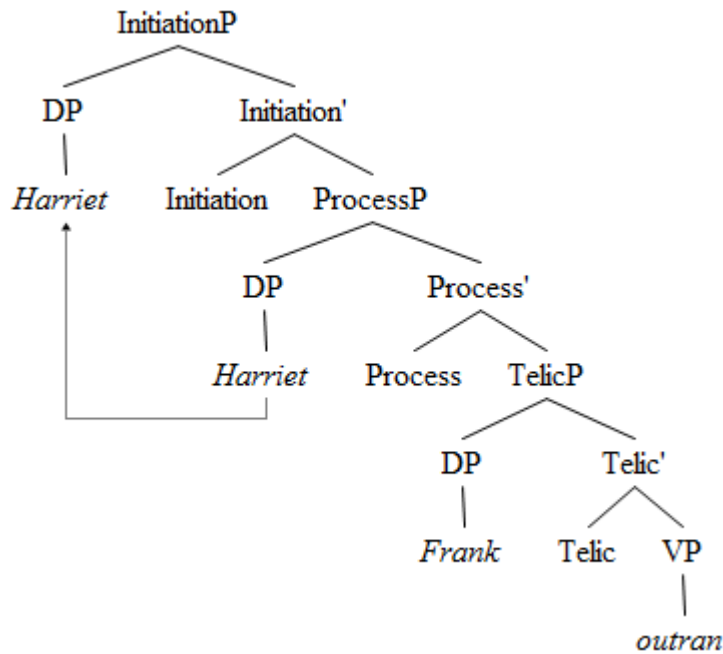
The alternations under consideration, then, might be seen to come about when  $V_L$  has in its extended projection an argument-introducing head which is usually absent. A possible candidate for this head is Telic as, following Rosen (1999, section 1.2), it can be observed that at least two out of the three constructions seem to force a telic reading:

- (37) (a) \*Harriet outran Frank for hours.  
 (b) \*Harriet ran her way into the house for hours.

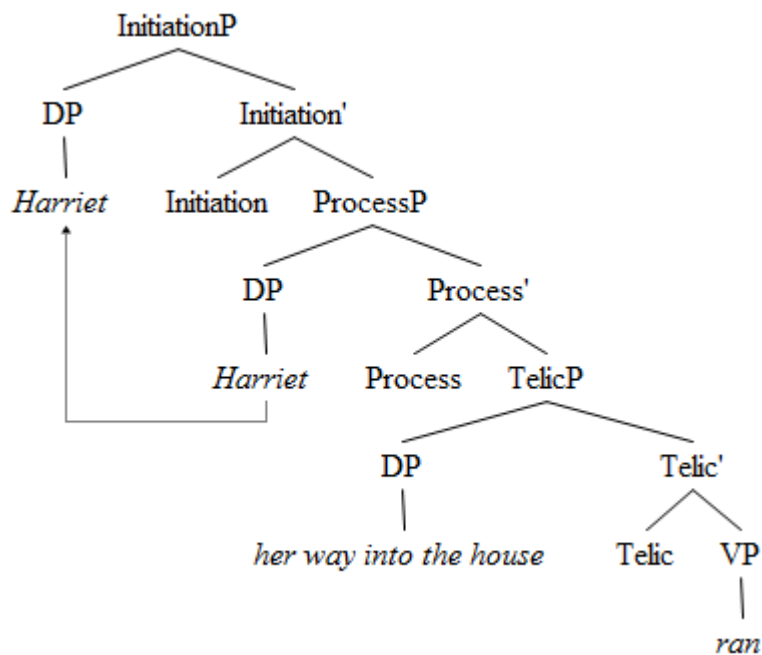
(c) ?Harriet ran a run for hours.

Possible trees for the structures are as follows (subsequent movement of the elements is omitted):

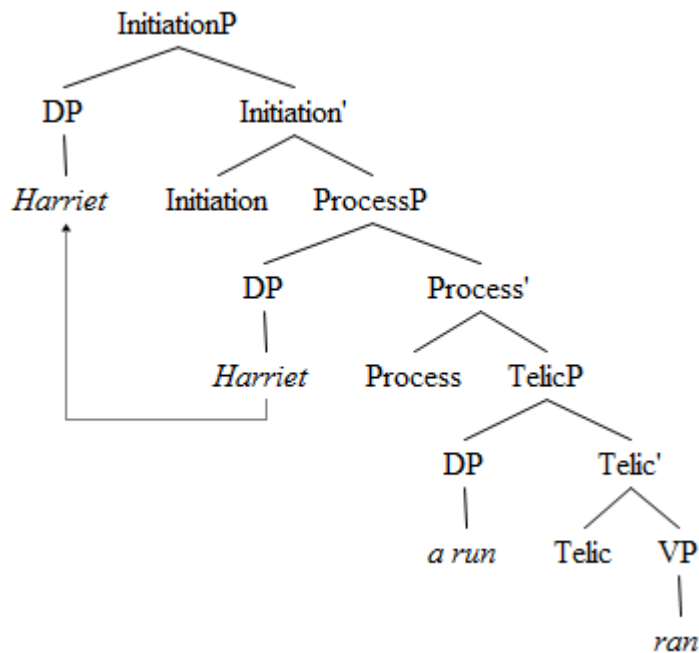
(38) (a) Harriet outran Frank.



(b) Harriet ran her way into the house.



(c) Harriet ran a run.



However, the question of why these alternations only affect process verbs still remains. This issue likely relates to a more general question of what argument-structure alternations are possible (in a specific language or in languages generally), which I will not attempt to address here. One more concrete solution for the specific cases where a new argument is added, however, may be that argument addition is impossible in cases where there is already an argument in the specific position to which the new argument would be introduced. (This has consequences for the theory of the position(s) of the objects of transitives, which I will not explore further here.)

Various non-process verbs occur with these constructions. With V *one's way into* and cognate objects there is only a very small number of exceptions (*grow* and *die* respectively with each construction); a possible explanation is that these verbs allow themselves to co-opt a Process head in these very limited contexts: *the tree grew its way into the building*, for example, certainly seems to resemble a motional process.

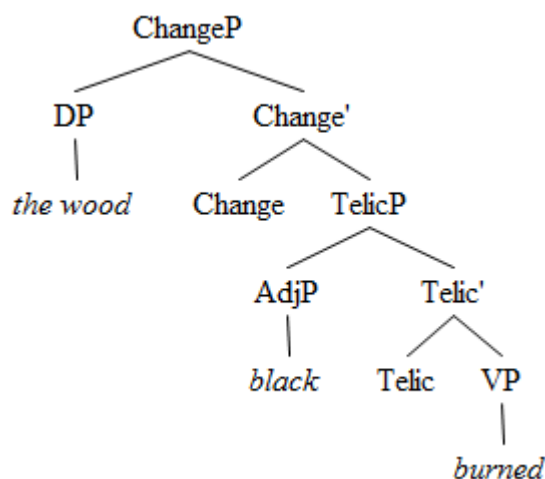
### 5.3 Other diagnostics



Two diagnostics remain to be accounted for: the *for hours* and resultative constructions. The simple explanation of the former is that *for hours* can only occur in the absence of a Telic head.

As regards resultatives, recall that it has been suggested that this construction, with intransitive verbs, is possible only in the absence of an Initiator – and therefore an Initiation head. With an adjective (rather than a prepositional phrase) expressing the end state, it also appears to occur only with verbs which are not inherently telic, i.e. with the *melt* class but not the *break* class. This suggests one possible analysis of this construction: the adjectival result state is expressed in the specifier of Telic (the equivalent of Ramchand's *res*), as shown in (38) (subsequent movement of the verb to a position above *black* is not shown).

(39) the wood burned black



Verbs like *break* in which the Spec,TelicP position is already filled by the argument (which is also merged in Spec,ChangeP) cannot then allow this type of resultative as the adjective expressing the result state cannot be merged. This also explains why the construction is ruled out with inherently telic non-anticausative verbs like *arrive*, *fall* and *die*. It still leaves open, however, the wider question of why resultatives are restricted to verbs which occur without the Initiation projection, and specifically why they do not occur with verbs of change like *rise*, *decay* and *happen* which are initiated (or at least, do not seem to allow anticausative forms) but not inherently telic. The relationship of the intransitive and transitive resultative

constructions under this approach is likewise left unanswered. Unfortunately I do not have a solution to these problems at present.

In spite of these outstanding issues, however, I believe that this section demonstrates that the functional structure adopted is a promising way of accounting for the variations amongst intransitive verbs classes which have been discussed. Hopefully further research will shed more light on the remaining problems.

## 6. CONCLUSION

The principal basis of this article has been the empirical analysis presented in section 2. This analysis produced two main results. Firstly, it was shown that the various diagnostics of ‘unaccusativity’ in English tend to show good correlation with Sorace’s (2000) auxiliary selection hierarchy, with the sets of verbs they pick out tending to cluster toward one end of the hierarchy or the other. In spite of some complications, this is good support for Sorace’s hierarchy as a descriptor of intransitive verb behaviour being applicable to various constructions in English, adding to the evidence that it may apply not just to auxiliary selection in Western European languages but to various constructions across a range of languages.

Secondly, however, the analysis showed that the diagnostics 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, where it was argued that the unaccusative hypothesis, in its traditional form, is inadequate for accounting for the patterns observed in English.

Section 4 presented a new account. 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. Adopting an approach similar to that of Ramchand (2008), it was argued that the behaviour of different classes can be linked to the presence or absence of thematic heads encoding the features of initiation, processhood, inherent telicity and change. This was explored

further in relation to the specific diagnostics in section 5, although the analyses presented there must remain provisional.

This analysis opens up various avenues for further research. For one thing, more research is needed on the ramifications of the analysis presented for a general theory of syntactic argument structure, including thematic roles and the behaviour of verbs that are not intransitive, and on resolving the differences between this account and that of Ramchand (2008), which does not deal with unaccusativity directly. In addition, work remains to be done on the general cross-linguistic applicability of this theory, and any further refinements which may be needed. Given the evidence in support of Sorace's (2000) unaccusativity selection hierarchy (perhaps better referred to as the 'split intransitivity hierarchy', following Sorace & Shomura 2001) one of the aims of this research must be to explain why the patterns described by this hierarchy hold as they do. I speculate that this can be related to the hierarchical order of the argument-licensing functional heads; however, this too remains to be investigated further.



<i>belong</i>	✓	?	*	*	*	*	*	*	?	*
<i>sit</i>	✓	✓	*	*	*	*	?	*	✓	*
<i>seem</i>	✓	✓	*	*	*	*	*	*	✓	*
<i>tremble</i>	?	*	✓	✓	?	✓	?	*	✓	*
<i>cough</i>	?	*	✓	✓	✓	✓	?	*	✓	*
<i>skid</i>	?	✓	✓	✓	?	✓	✓	*	✓	*
<i>rumble</i>	?	*	✓	✓	?	✓	*	*	✓	*
<i>swim</i>	✓	✓	✓	✓	✓	✓	✓	*	✓	*
<i>run</i>	✓	✓	✓	✓	✓	✓	✓	*	✓	*
<i>walk</i>	✓	✓	✓	✓	✓	✓	✓	*	✓	*
<i>work</i>	✓	✓	✓	✓	(✓)	✓	✓	*	✓	*
<i>play</i>	✓	✓	✓	✓	(✓)	✓	✓	*	✓	*
<i>talk</i>	?	*	✓	✓	(✓)	✓	✓	*	✓	*

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## FOOTNOTES

1. Thanks are due particularly to Michelle Sheehan and Ian Roberts for their many constructive remarks on this work. I also wish to express my thanks for comments from András Bárány, Theresa Biberauer, Jamie Douglas, Georg Höhn and Ezekiel J. Panitz.

2. *rain* and *similar* verbs (snow, hail) can be seen to lack arguments altogether are hence are not ‘intransitive’ in the sense of being ‘one-argument verbs’, and so will be considered beyond the scope of the present discussion.

3. It is not inherently problematic if one diagnostic does not pick out all members of a class: it is plausible that a diagnostic that identifies a particular class may still fail to identify certain of its members for independent reasons. This is argued, for example, by Levin and Rappaport Hovav (1995: 58ff.) for the resultative diagnostic. This diagnostic, according to these authors, picks out all unaccusatives with two systematic groups of exceptions (‘verbs of inherently directed motion’, ‘statives’); there are independent reasons for the exceptional behaviour of these two groups. It is desirable, however, that these verbs be identified by other unaccusativity diagnostics.

4. Possibly a verb like *rain* is [+process, –initiated], but see fn. 2.

5. Ramchand (2008) may in fact be wrong here: it seems natural to suppose that stative verbs like *be* and *remain* may be best classed as non-initiated, at least some of the time. However, this introduces various difficulties into the analyses to follow which, while by no means insurmountable, I feel are best avoided here for reasons of space.

6. Another possibility is that these heads are always present but may take either positive or negative values for the features they encode. This may or may not be a superior analysis, but in any case it is expositionally simply to assume that the heads may simply be absent.