# Chapter 18

# Rethinking split intransitivity

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This chapter presents a development of Perlmutter's (1978) unaccusative hypothesis. It argues that the verbal domain should be considered to comprise an ordered series of functional heads here termed the VISCO hierarchy, and that this approach permits an improvement understanding of split intransitive behaviours. The history of research into unaccusativity and split intransitivity is considered, with the strengths and weaknesses of the proposals made by Perlmutter (1978), Burzio (1986), Levin & Rappaport Hovav (1995) and others discussed and compared to the VISCO approach. The VISCO hierarchy is also compared to the hierarchy proposed in Ramchand (2008) and discussed in relation to the work of Sorace (2000). Issues such as difficulties in classifying unergatives/unaccusatives within a single language, apparent variation between languages, and the problem of syntax–semantics linking are all considered.

## 1 Introduction

The purpose of this chapter is to present, in overview, a new approach to the phenomena of "split intransitivity" – phenomena where different sorts of intransitive predicates allow or disallow different syntactic behaviours. Specifically, I discuss this new approach in the context of a comparison to some of the major previous contributions in this area. Some strengths and weaknesses of these various existing approaches are critically evaluated, with arguments for how the new approach overcomes some of the weaknesses of those previous whilst retaining their important insights.

Examples of split intransitive phenomena include those presented in (1–4), from English, and (5–7), from other languages. In each case, different verbs exhibit different behaviours in relation to the constructions in question:

(1) The causative alternation

    a.  i.    The lollipops melted.

        ii.   Lucy melted the lollipops.

    b.  i.    The window broke.

        ii.   Chris broke the window.

    c.  i.    Harry coughed.

        ii.  * Sarah coughed Harry. [intended meaning: 'Sarah made Harry cough.']

    d.  i.    The pickpocket talked.

        ii.  * The police talked the pickpocket. [intended meaning: 'The police made the pickpocket talk.']

(2) Prenominal past participles

    a.   the melted lollipops

    b.   the broken window

    c.   the recently arrived recruits

    d.  * the coughed man

    e.  * the talked pickpocket

    f.  * the played cricketers

(3) *out*-prefixation

    a.   Lucy outtalked/outworked/outplayed/outswam/outran Chris.

    b.  * Lucy outremained/outdied/outcame/outarrived Chris.

(4) V *one's way into*

    a.   Lucy talked her way into the building.

    b.   Chris worked his way into the upper echelons of university administration.

    c.   Wayne played his way into the quarter-final.

    d.  * Jessica died her way into the cemetery.

    e.  * The train arrived its way into the station.

(5) Auxiliary selection (German)

    a.  Hans *ist* gegangen.
       Hans is  gone
       'Hans went.'

b. Hans *hat* gespielt.
Hans has played
'Hans played.'

(6)  *Ne*-cliticisation (Italian)

a. Ne        arrivano   molti.
of-them arrive-3PL many-M.PL
'(Of them,) many arrived.' (Bentley 2004: 221)

b. *Ne        studiano   molti.
of-them study-3PL many-M.PL
'(Of them,) many studied.' (Bentley 2004: 222)

(7)  Case marking (Georgian)

a. Rezo        gamoizarda.
Rezo.NOM he.grew.up
'Rezo grew up.' (Harris 1982: 293)

b. Nino-*m*    daamtknara.
Nino-ERG she.yawned
'Nino yawned.' (Harris 1981: 147)

The new approach to syntactic structure proposed to account for these phenomena, here labelled the VISCO hierarchy, is presented in §2. In §3, I then compare the VISCO approach with previous approaches following Perlmutter's (1978) unaccusative hypothesis. I argue that the VISCO approach overcomes a number of the problems of its predecessors, though I shall also stress that it should be seen as a development of ideas already in the literature, not something in radical opposition to them. §4 concludes.

## 2  The VISCO hierarchy

In Baker (2016; 2018; 2019) I posit variants on the following structure for the thematic domain (equivalent to *v*P), termed the "thematic functional hierarchy" (TFH) or the "VISCO hierarchy" after the initials of the five heads it comprises, see Figure 18.1.[1]

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[1]The reader may note similarities between the VISCO approach and that of Ramchand (2008). I compare the two approaches briefly here in §3.4.2, and in more detail in Baker (2018). Note that the variant of this hierarchy in Baker (2018), comprising a slightly different set of heads is called the "VICTR hierarchy".
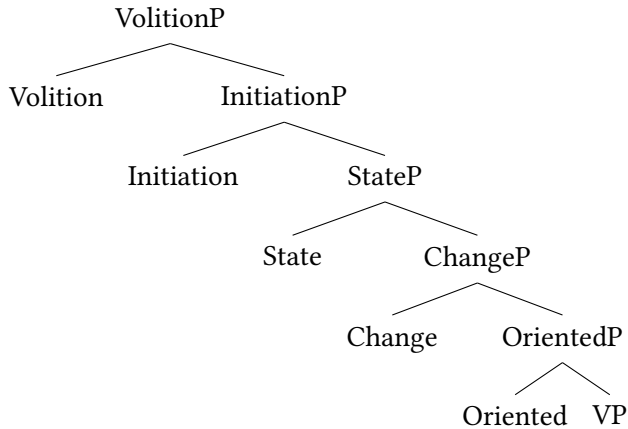
Figure 18.1: The thematic functional hierarchy

Arguments may be merged in the specifier positions of any of these heads and they gain their thematic interpretation from the positions in which they are merged. I describe an argument merged in Spec,VolitionP as bearing θ-VOLITION, one merged in Spec,InitiationP as bearing θ-INITIATION, and so forth. A single argument may be merged in multiple positions and hence bear multiple "roles".[2] For example, in the sentence in Figure 18.2 *Lucy* (a volitional initiator undergoing a change of location) bears θ-VOLITION + θ-INITIATION + θ-CHANGE.[3]

The five VISCO heads are determined on the basis of the main features which Ihave deemed to be determinants of split intransitive behaviour in the languages I have studied in this regard: [±VOLITION], [±INITIATION], [±STATE], [±CHANGE] and [±ORIENTED]. (These languages include English, the Western European languages discussed by Sorace (2000), and various languages with "split-S" case and/or agreement systems, including particularly Basque and Georgian; see Baker 2016; 2018; 2019 for further discussion.) Encoding each of these features on separate heads is in line with the principle "one feature–one head" of the cartographic programme (see van Craenenbroeck 2009 and discussion in Baker 2018) and is also supported by evidence for the hierarchical ordering of the features (partially discussed here in §3.4.6; see Baker 2018 for more in-depth discussion).

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[2]This is of course at odds with the traditional analysis of thematic roles and argument movement going back to the government and binding (GB) framework. In GB, arguments must have exactly one thematic role, which is assigned to them on the basis of its D-structure position (in minimalist terms, its first-merge position); movement to positions in which thematic roles may be assigned is barred. However, there seems to be no a priori reason why these principles should necessarily hold, and a minimalist grammar may reasonably reject them.

[3]In this and all subsequent trees I omit all structure outside of the thematic domain, and represent V only in its first-merge position.
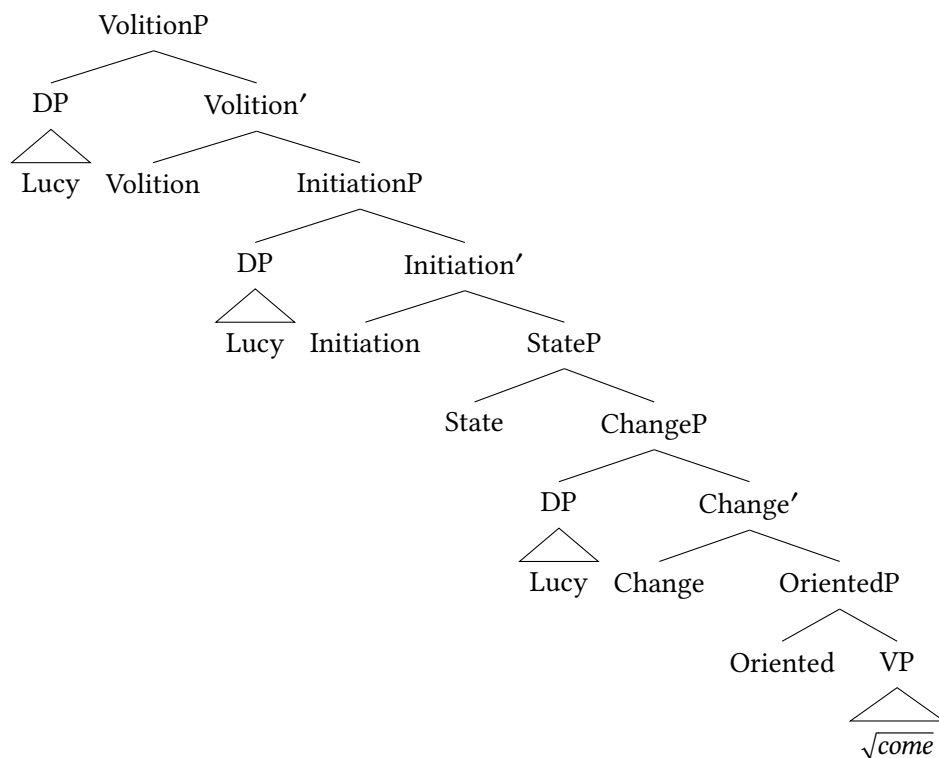
Lucy is coming.



Figure 18.2: An example of thematic role assignment

The VOLITION head, which distinguishes whether an event is volitionally controlled or not – as opposed to INITIATION, which expresses causation independently of volition – allows us to capture behaviours such as the following (from Tibetan):

(8)  Tibetan (DeLancey 1984: 132)

a.  Ŋa-*s*      Seattle-la phyin-pa-yin.                    [+VOLITION]
    1SG-ERG Seattle-to went-PRF.VOL
    'I went to Seattle.'

b.  Ŋa-∅      śi-byuŋ.                                          [−VOLITION]
    1SG-ABS die-PRF.INVOL
    'I died.'

VOLITION seems to be marginally active in split intransitive behaviours in English – note the following contrasts, where the [+VOLITION] sentences are more strongly accepted with the diagnostics than the [−VOLITION] ones:

(9)   a.   Lucy outplayed/outtalked/outran Chris.                [+VOLITION]

    b.   ? Lucy outcoughed/outtrembled/outskidded Chris.        [−VOLITION]

(10)   a.   [+VOLITION]

      i.   Lucy played a play.

      ii.   Lucy talks the talk.

      iii.   Lucy ran a run.

    b.   [−VOLITION]

      i.   ? Lucy trembled a tremble.

      ii.   ? Lucy skidded a skid.

The INITIATION and CHANGE heads capture for example the distinction made between [−INITIATION, +CHANGE] intransitives which allow the causative alternation in English, and [+INITIATION] or [−CHANGE] verbs which do not (an analysis modified from Ramchand 2008):

(11)   The causative alternation:

    a.   i.   The lollipops melted.                [−INITIATION, +CHANGE]

        ii.   Lucy melted the lollipops.

    b.   i.   Chris arrived.                [+INITIATION, +CHANGE]

        ii.   * Lucy arrived Chris. [intended meaning: 'Lucy made Chris arrive.']

    c.   i.   The vase remained on the table.        [−INITIATION, −CHANGE]

        ii.   * Harry remained the vase. [intended meaning: 'Harry made the vase remain']

    d.   i.   The pickpocket talked.                [+INITIATION, −CHANGE]

        ii.   * The police talked the pickpocket. [intended meaning: 'the police made the pickpocket talk']

The CHANGE head, alongside STATE, further allows us to identify three classes of intransitives in English. [−STATE, −CHANGE] verbs allow constructions such as the following, which do not generally occur with [+CHANGE] verbs:

(12)  a.  [−STATE, −CHANGE]

       i.  Lucy talked her way into the room.

      ii.  talker

   b.  [+CHANGE]

       i.  * Lucy arrived her way into the room.

      ii.  * melter, *arriver

[+CHANGE] intransitives, on the other hand can generally occur as prenominal past participles, but [−CHANGE] intransitives do not:

(13)  a.  [+CHANGE]

       i.  the melted ice

      ii.  the recently arrived recruits

   b.  [−CHANGE]

       i.  * the coughed man

      ii.  * the talked professor

[+STATE] intransitives form a distinct class, allowing neither set of constructions:

(14)  a.  * Lucy stayed her way into the room.

   b.  * stayer

   c.  * the stayed man

This is evidence for the operation of the [±STATE] feature.

Finally, I employ the head labelled ORIENTED to account for the distinction between (inherently) telic verbs like *arrive* and *tear* ([+ORIENTED]) and atelic verbs like *melt*, *stay* and *talk* ([−ORIENTED]). Only the latter readily occur with *for hours*:

(15)  a.  [+ORIENTED]

       i.  * Lucy arrived for hours.

      ii.  * The cloth tore for hours.

   b.  [−ORIENTED]

       i.  The ice melted for hours.

      ii.  Lucy stayed for hours.

     iii.  Chris talked for hours.

In the following section I compare the VISCO hierarchy approach to split intransitivity in relation to previous work on the topic.

# 3 The VISCO hierarchy and the unaccusative hypothesis

## 3.1 Introduction

In this section I discuss the VISCO hierarchy in relation specifically to the major existing approach to split intransitivity, the "unaccusative hypothesis", in its various forms. The unaccusative hypothesis was first introduced in Perlmutter (1978) and has been refined in much subsequent work. §3.2 overviews the unaccusative hypothesis as originally formulated. §3.3 identifies one major strength of the unaccusative hypothesis and considers how this is retained in the VISCO approach. §§3.4 and 3.5 then identify two important weaknesses of Perlmutter's original proposal, and discuss various attempts to overcome these – it is argued that these, in turn, have weaknesses which can be overcome in the VISCO model.

## 3.2 The origins of the unaccusative hypothesis

It was Perlmutter's (1978) hugely influential article that first brought split intransitivity to the fore of discussion in generative linguistics. Working within the framework of relational grammar, Perlmutter formulated the following hypothesis:

(16)  The unaccusative hypothesis (Perlmutter 1978: 160)
      "Certain intransitive clauses have an initial 2 but no initial 1."

"1" and "2" in relational grammar terms refer to primitives of grammatical relations. A "final 1" is a "surface subject"; a "final 2" a "surface direct object". In an ordinary active transitive sentence, the final 1 is also an "initial" 1, and the final 2 an "initial" 2. However, arguments may change relation between the initial and final levels ("strata"); hence for example in the passive the initial 2 is "advanced" to become a final 1 (the surface subject). The idea in (16), therefore, is that *certain intransitive clauses have an argument which bears the same relation as the direct object of transitive clauses.* As in the passive, however, this argument is advanced to the final 1/"surface subject" position, in accordance with the "final 1 law" which states that all clauses must have a final 1 (Perlmutter 1978: 160).

Perlmutter divided intransitive predicates into two groups, terming them "unergatives" (clauses with an initial 1) and "unaccusatives" (clauses with an initial 2). The basis of this division was semantic, though it was encoded in the syntax (see Levin & Rappaport Hovav 1995: 4–5). On Perlmutter's scheme, the division of intransitives into unergatives and unaccusatives was as follows (see Perlmutter 1978: 162–5 for fuller lists and discussion):

(17)  Unergatives

    a.  Willed or volitional acts: e.g. *work, play, speak, swim, walk …* (includes manner-of-speaking verbs e.g. *whisper, shout* and predicates describing sounds made by animals e.g. *bark, neigh*)

    b.  Certain involuntary bodily processes: e.g. *cough, sneeze …*

(18)  Unaccusatives

    a.  Predicates expressed by adjectives in English

    b.  Predicates whose argument is a semantic patient: e.g. *burn, fall, slide, drown, sit …* (includes inchoatives e.g. *melt, freeze …*)

    c.  Predicates of existing and happening: e.g. *exist, happen, disappear …*

    d.  Non-voluntary emission of stimuli that impose on the senses: e.g. *shine, sparkle …*

    e.  Aspectual predicates: e.g. *begin, stop …*

    f.  Duratives: e.g. *last, remain, survive …*          (Perlmutter 1978: 162–163)

Perlmutter notes, however, that "alternative classifications are possible" (1978: 163).

Perlmutter's article advances the unaccusative hypothesis in order to explain the impersonal passive construction in languages like Dutch and Turkish. An example of this construction in Dutch is as follows:

(19)  Dutch (adapted from Zaenen 1993: 131)
    Er    werd    hard gewerkt.
    there became hard worked
    'There was hard work.'

The impersonal passive is, in effect, the passivisation of an intransitive clause. It is not, however, possible with all intransitives in the languages which allow it, for example (again from Dutch):

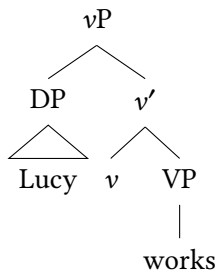(20)  Dutch (adapted from Zaenen 1993: 131)
    * Er    werd    gebloed.
     there became bled
     'There was bleeding.'

Perlmutter's idea is that the impersonal passive is possible with unergative clauses, but not unaccusative ones (for details of the mechanics of this, see that article).
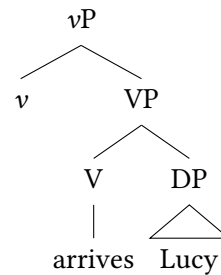
Other research produced at about this time connected the unaccusative hypothesis to a number of other phenomena, such as pseudopassives (Perlmutter & Postal 1984: §6.3), auxiliary selection (Burzio 1981; 1986; Perlmutter 1989) and split intransitive case assignment (Perlmutter 1978: 165–166; Harris 1981).

Burzio (1981; 1986) reformulated the unaccusative hypothesis in government–binding terms. Under Burzio's approach, the argument of unergatives is an *external argument* whereas the argument of unaccusatives is an *internal argument*. In current minimalist terms, this is represented as follows, with the external argument first-merged in Spec,*v*P and the internal argument in the complement position of VP:

(21)  a.  Unergatives                    b.  Unaccusatives

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          vP                                      vP
         /  \                                     /  \
       DP    v′                                  v    VP
       /\   /  \                                     /  \
     Lucy  v   VP                                   V    DP
                |                                   |    /\
              works                              arrives Lucy
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The unaccusative hypothesis as formulated by Perlmutter and Burzio has both strengths and weaknesses. These will be the focus of the next three subsections, discussed in relation to more recent explorations of split intransitivity including the VISCO approach.

## 3.3 The central insight of the unaccusative hypothesis

In spite of various weaknesses to be discussed subsequently, a key strength of the unaccusative hypothesis in its original form (as put forward by Perlmutter 1978) is the connection of the phenomena it aims to explain to grammatical relations. This means that, rather than merely considering intransitives in isolation, parallels can be made with other types of clause. Thus, for example, the explanation of the impersonal passive is subsumed under a general explanation of the passive – it is possible only in clauses with an initial 1. These can be intransitive, as in (22), but also transitive, as in canonical examples of the passive such as the following (once more from Dutch):

(22)   Dutch
        Ik word     verslagen.
        I   become beaten
        'I am beaten.'

Similar parallels between intransitives and transitives, which can likewise be captured in terms of sensitivity to grammatical relations, can also be seen in many other split intransitive phenomena.

Under Burzio's (1981; 1986) reformulation of the unaccusative hypothesis, a variant of this insight is maintained in the following terms: that the status of a verb as unergative or unaccusative is directly related to the *position* of its argument in the syntactic structure (at D-structure, or in more recent terms first-merge). This keeps the key strength of Perlmutter's analysis: the capturing of parallels between intransitive and transitive clauses.

This same insight is retained in the VISCO hierarchy approach to split intransitivity. Whilst the VISCO approach presents a more fine-grained approach to syntactic argument structure than Burzio and other traditional approaches, allowing for more than just two positions of intransitive arguments, split intransitive behaviours are connected to argument positions nevertheless, and consequently the approach is able to capture of parallels between intransitive and transitive clause types.

A couple of examples will serve to illustrate this. Firstly, agentive suffix *-er* generally describes the argument which in the equivalent clausal construction would be first-merged in Spec,InitiationP. This is the case both with transitive *destroy* (> *destroyer*) and intransitive *talk* (> *talker*), where in both cases it is a θ-INITIATION argument that is described. Secondly, the "undergoer" of a verb like *melt* occupies the Spec,ChangeP position whether the predicate is transitive or intransitive (see Figure 18.3). Similar parallels can be seen with other split intransitive diagnostic constructions (see Baker 2018; 2019).

Thus the VISCO approach maintains, in essence, the Burzio-type approach to understanding split intransitive behaviours, but combines it with a more fine-grained understanding of syntactic structure. Some reasons for preferring this more fine-grained syntactic structure are presented in the next two subsections, which identify two particular kinds of problem with the traditional unaccusative hypothesis, which it is argued the VISCO approach is able to overcome.
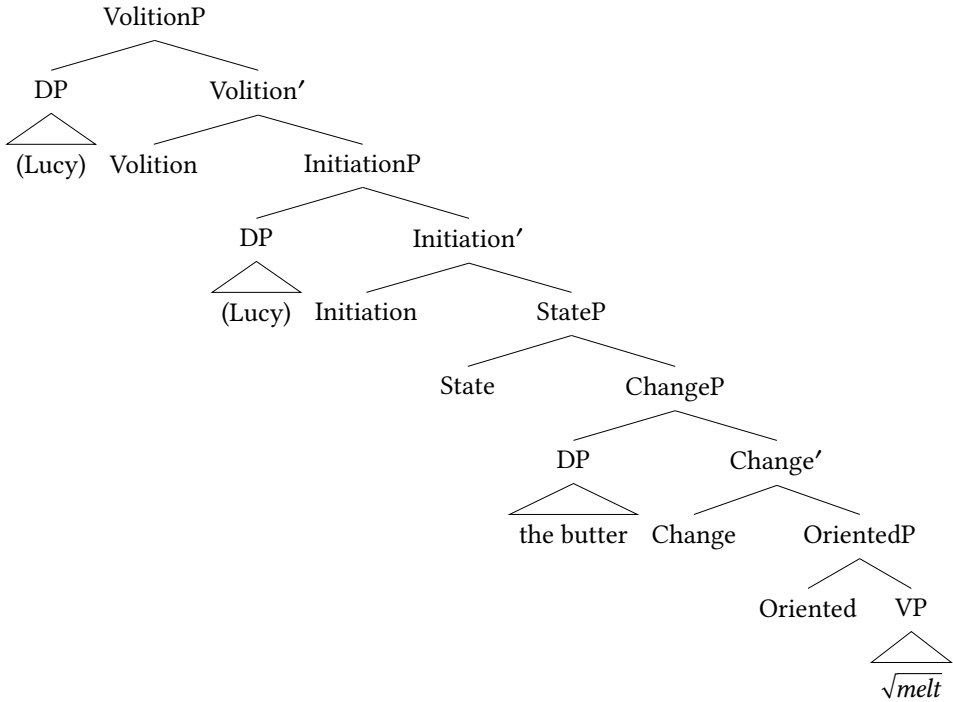
Lucy melts the butter./The butter melts.

Figure 18.3: Thematic role assignment in the causative alternation

## 3.4 The problem of binary classification

### 3.4.1 Introduction

As noted, Perlmutter (1978) and much subsequent work divides intransitives into two main classes, unergatives and unaccusatives. This section will present various ways in which this binary classification proves to be problematic. It also discusses some suggested solutions, arguing that these have weaknesses but that these can be overcome by incorporating their insights into the VISCO model.

### 3.4.2 Ambiguity in classification criteria

Given Perlmutter's criteria for distinguishing unergatives and unaccusatives given in (17–18) above, one issue arises with predicates that satisfy criteria from both classes. For example, volitional acts are supposed to be expressed by unergatives, but verbs like *fall*, *slide* and *disappear* are meant to be unaccusative.

What happens, then, when verbs in this latter set describe volitional events: a deliberate act of falling or sliding, for example?

Perlmutter discusses this sort of verb (1978: 163–164), considering oppositions such as the following:

(23)    a.  The wheels slid on the ice.

         b.  Joe slid into third base. (Perlmutter 1978: 163–164)

(23a) (non-volitional) is analysed as unambiguously unaccusative; Perlmutter suggests (23b) is either unergative on account of its volitionality or a biclausal causative – presumably something like the following, where the embedded clause is unaccusative like (23a) above:

(24)    [Joe CAUSE [slid Joe into third base]]

Implicit in the first suggestion is that the volitionality of a predicate might somehow "override" its unaccusative status and lead to it being classified as unergative, but this is not developed by Perlmutter. (24) is arguably an over-complex representation of the sentence and requires an analysis (likewise not provided by Perlmutter) of why the second *Joe*, or whatever element occupies that position, is not pronounced.

Unergative/unaccusative ambiguities like these lead Perlmutter to not classify certain classes of verbs at all: he mentions verbs of motion, presumably verbs like *go* and *arrive*, as amongst those he chooses not to categorise.

Ambiguities of classification have proven to be a continuing problem in the theory of split intransitivity. Ongoing research in the years following Perlmutter's (1978) article identified many so-called "mismatches", where the classes of unaccusatives and unergatives appeared to differ between languages – or where different purported diagnostics of unaccusativity *within* a language identified different classes. An important early work in this regard is Rosen (1984). Rosen shows, for example, that the verbs meaning 'to sweat' show unaccusative properties in Choctaw (occurrence with accusative pronouns) but unergative properties in Italian (occurrence with auxiliary 'have'):

(25)  Choctaw (Rosen 1984: 62)          (26)  Italian (Rosen 1984: 62)
      Sa-laksha.                               Ho      sudato.
      1SG.ACC-sweat                            have.1SG sweated
      'I sweated.'                             'I sweated.'

I will now discuss some particular sorts of problems in unergative/unaccusative classification which can be observed to occur: firstly, where the unergative and

unaccusative classes in a given language appear to overlap on the basis of standard diagnostics (§3.4.3); secondly, where certain verbs cannot be reliably placed in either class according to the diagnostics (§3.4.4); thirdly (and relatedly), the problem of verbs which do not behave as expected in relation to the class to which they are supposed to belong (§3.4.5); and fourthly, the matter of cross-linguistic variation (§3.4.6). I will discuss some existing proposed solutions to these issues (where relevant), some problems with these solutions, and also the solutions which are possible in the VISCO approach.

### 3.4.3 Overlaps

One problem with traditional approaches to unaccusativity occurs with apparent overlaps between unergative and unaccusative classes. This occurs, for example, when diagnostics of telicity are considered to diagnose unaccusativity – various authors have connected telicity to unaccusativity in various languages (such as Zaenen 1988, Borer 2005), including Schoorlemmer (2004: 227) for English. Certainly many "unaccusative" verbs do not readily allow "atelic" readings, as shown by their incompatibility with *for hours* in contexts like the following:

(27)   a.   * Lucy arrived for hours.
       b.   * Chris died for hours.
       c.   * The window broke for hours.

By contrast, all "unergative" verbs allow *for hours* in parallel contexts:

(28)   a.   Lucy coughed for hours.
       b.   Chris swam for hours.
       c.   Harry played for hours.

However, many "unaccusative" verbs do allow *for hours* just as readily:

(29)   a.   The butter melted for hours.
       b.   The wood burned for hours.

The class of verbs which allow *for hours* in this sort of sentence, then, overlaps with the classes identified as "unergative" and "unaccusative" by the other diagnostics. One way around the problem is simply to deny that telicity relates to unaccusativity at all. This is the approach taken by Levin & Rappaport Hovav (1995) (henceforth L&RH), which remains one of the most important works on split intransitivity to date. They show that not all "unaccusative" verbs are

telic (pp. 172–173), which is the same position taken here. But it is not therefore possible on their approach to capture a link between telicity and argument structure, which is problematic as many authors (for example, Tenny 1987, Borer 2005) have presented evidence for just such a link, in English and other languages. For instance, Kiparsky (1998) links telicity to case in Finnish:

(30)   Finnish

    a.   Ammuin karhu-*a*.
        I.shot    bear-PART
        'I shot at the bear.'

    b.   Ammuin karhu-*n*.
        I.shot    bear-ACC
        'I shot the bear.'

Case is of course often related to the relative positions of arguments, which suggests it is appropriate to link telicity to argument structure. This is lost on L&RH's approach.

A L&RH-style approach which did make reference to telicity might not fare much better, however. For them, verbs must classify as either unergative or unaccusative (see §3.5 for discussion of how this is achieved): they would not capture how a verb like *melt* patterns with *break* (unaccusative) in terms of the resultative construction but with *work* (unergative) in terms of the *for hours* diagnostic. We cannot get around this problem by positing that *melt* is unergative when it is atelic but unaccusative when telic. It still shows the properties of an "unaccusative" in clearly atelic contexts, for example it allows the resultative construction (a prototypical diagnostic of unaccusativity; restricted to [−INITIATION, +CHANGE] verbs):

(31)   The butter melted soft for hours.

This sort of pattern is not an issue on the VISCO approach, however. On this approach *for hours* and the other diagnostics are simply sensitive to separate features, separately encoded in syntactic structure, and overlaps between classes are not a problem.

The VISCO approach can be further compared in this regard to another important strand of work on split intransitive phenomena, labelled the "semantic approach" by L&RH (§1.2.2). Whilst Perlmutter's original conception of unaccusativity made reference to both syntax and semantics, the semantic approach

attempts to explain split intransitive patterns in terms of semantics alone, without reference to syntactic notions such as the structural positions of arguments.[4] This approach denies that the difference between unergative and unaccusative predicates relates to syntactic structure, and instead claims that the distinction between the two is entirely due to the sensitivity of the diagnostic constructions to different semantic values of the predicate. Works which adopt this sort of approach include Van Valin (1990) and Zaenen (1993). Zaenen, for example, argues that the availability of prenominal past participles in Dutch is sensitive to telicity (32), whereas the availability of impersonal passives is sensitive to "protagonist control" (33):

(32)　Dutch (adapted from Zaenen 1993: 140)

　　a.　de　gevallen jongen　　　　　　　　　　　[+TELIC]
　　　　the fallen　　boy
　　　　'the boy who has fallen'

　　b.　* de　gewerkt man　　　　　　　　　　　　[−TELIC]
　　　　the worked　man
　　　　'the man who has worked'

(33)　Dutch (adapted from Zaenen 1993: 131)

　　a.　Er　　werd　　hard gewerkt.　　　　　　[+CONTROL]
　　　　there became hard worked
　　　　'There was hard work.'

　　b.　* Er　　werd　　gebloed.　　　　　　　　　[−CONTROL]
　　　　there became bled
　　　　'There was bleeding.'

The semantic approach does not predict that all purported "unaccusatives", or all purported "unergatives", need behave in the same way. Different diagnostics may pick out separate, if overlapping, groups of verbs. This insight is retained in the VISCO approach. In addition to the examples discussed above, observe for example that various verbs allow prenominal past participles but disallow resultatives:

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[4]L&RH also identify the "syntactic approach" (§1.2.1), exemplified with Rosen (1984). Contrary to L&RH's implication, however, this is not the direct opposite to the semantic approach – while Rosen argues that unaccusative behaviours are not wholly determined by semantics, she still seems to allow some role for it.

(34)   Prenominal past participles

   a.   the burned bacon

   b.   the recently arrived recruits

   c.   the departed visitor

(35)   Resultatives

   a.   The bacon burned black.

   b.   * Lucy arrived tired. [intended meaning: 'Lucy became tired as a result of arriving']

   c.   * Chris departed tired. [intended meaning: 'Chris became tired as a result of departing']

An approach which makes reference to semantics can elegantly account for mismatches of this sort simply by postulating that the two constructions are sensitive to different sets of semantic features ([−INITIATION,+CHANGE] for resultatives; [+CHANGE] alone for prenominal past participles). This is exactly what is done in the VISCO approach, somewhat following the semantic approach. Different diagnostics pick out different classes of verbs, summarised for English in Table 18.1 (for further discussion see Baker 2018; 2019).[5]

Table 18.1: Summary of classes identified by English split intransitivity diagnostics

| Diagnostics | Principal intransitives identified |
| --- | --- |
| V *away*, V *one's way* into, suffix *-er* | [−CHANGE, −STATE] |
| Cognate objects, prefix *out-* | [−CHANGE, −STATE, (+VOLITION)] |
| Resultatives, causatives | [+CHANGE, −INITIATION] |
| Prenominal past participles | [+CHANGE] |
| *for hours* | [−ORIENTED] |

A further advantage of the semantic approach is its ability to capture straightforwardly the semantic basis of split intransitive behaviours. Many diagnostics pick out a set of verbs which can be defined in relatively clear-cut ways. Thus, each class has a well-defined semantic characterisation, unlike either of the

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[5]Though the discussion here focuses on English, similar remarks can be made about other languages.

"unergative" or "unaccusative" classes. For example, as I have argued in Baker (2016; 2018; 2019) and also discussed above, a number of diagnostic constructions in English are acceptable for the most part only with those intransitives that can be characterised as [−STATE, −CHANGE] (like *talk*, cf. [+STATE] *remain* and [+CHANGE] *arrive*):[6]

(36)  a.  Lucy talked/*remained/*arrived her way into the room.

     b.  Lucy was talking/*remaining/*arriving away.

     c.  Lucy talked the talk/*remained the remaining/*arrived the arrival.

     d.  talker, *remainer, *arriver

     e.  Lucy outtalked/*outremained/*outarrived Chris.

On the other hand, as again already mentioned, the causative alternation and the resultative construction seem to be limited to intransitives characterisable as [+CHANGE, −INITIATION]:

(37)  a.  Lucy burned the bacon.        [+CHANGE, −INITIATION]

     b.  *Lucy arrived Chris.        [+CHANGE, +INITIATION]

     c.  *Lucy talked Chris.        [−CHANGE, +INITIATION]

(38)  a.  The bacon burned black.

     b.  *Lucy arrived tired. [intended meaning: 'Lucy became tired as a result of arriving']

     c.  *Lucy talked tired. [intended meaning: 'Lucy became tired as a result of talking']

A semantic approach to these phenomena, making no reference to syntactic grammatical relations or argument positions, would be able to capture the behaviour of these constructions by reference to the semantic features alone. This has the apparent advantage of not having to make additional reference to an

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[6]It is true that these constructions are sometimes found with unaccusatives: e.g.

    (i)   The butter melted into the toast.

   (ii)   Lucy was freezing away outside in the snow.

  (iii)   The play died a death.

  (iv)   survivor

But such forms are generally sporadic exceptions and mostly do not seem to reflect any underlying generalisation; speakers' judgements regarding them are often weaker.

additional concept of "unaccusativity", thus allowing for an apparently simpler grammar. The VISCO approach shares this advantage, defining classes in terms of semantic features with no separate concept of unaccusativity.

However, the semantic approach misses some important generalisations which appear to connect split intransitivity to argument structure. Levin & Rappaport Hovav (1995: 11–12) discuss the example of prenominal past participles, which may only modify what would be "internal arguments" in the equivalent clausal constructions, under a standard Burzio-type approach to syntactic structure:

(39)  a.  Internal argument of transitive: *a badly written letter*

 b.  Internal argument of intransitive (unaccusative): *a recently appeared book*

 c.  External argument of transitive: \**a much-painted artist*

 d.  External argument of intransitive (unergative): \**a hard-worked lawyer*
(L&RH: 11)

As was exemplified in §3.3, the ability to capture this sort of parallel between intransitives and transitives is an important strength of the traditional unaccusative hypothesis, and indeed of any implementations of it which make reference to grammatical relations or argument positions. L&RH argue, however, that the semantic approach fails to account for such parallels satisfactorily, as there is no single semantic notion that all "internal arguments" have in common – Van Valin's (1990) appeal to an "undergoer" macrorole, they claim convincingly, cannot be considered truly semantic but rather a generalisation over a number of specific semantic roles. This, then, is a major weakness of the semantic approach.

The VISCO approach, however, overcomes this weakness. As discussed in §3.2, it is able to account for parallels between transitives and intransitives in structural terms. However, because it adopts a more fine-grained approach to the structure of the thematic domain of the clause, and because this structure is explicitly connected to semantic features ([±VOLITION], [±INITIATION] etc., valued on the functional heads), it is also able to take into account the semantic basis of split intransitive patterns as effectively as the traditional semantic approaches.

Another partial solution to the issue of overlaps between classes may be found in the work of Ramchand (2008), who proposes the following structure for the thematic domain – a fairly significant departure from traditional assumptions:

(40)      *init*P

```
        init      procP

              proc      resP

                     res
```
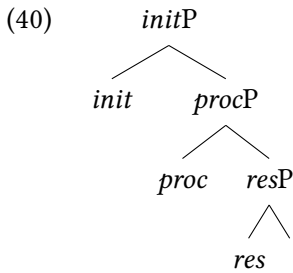
Arguments can be merged in the specifier positions of any of these three heads (the complement positions of *proc* and *res* are also available for arguments, but these do not seem to be filled in one-argument verbs). An argument merged in Spec,*init*P is termed an "INITIATOR", that in Spec,*proc*P an "UNDERGOER" and that in Spec,*res*P a "RESULTEE". The same argument can be merged in more than one of these positions: thus for example *run* is an [*init, proc*] verb and its argument is both INITIATOR and UNDERGOER, and *arrive* is [*init, proc, res*] so its argument is simultaneously INITIATOR, UNDERGOER and RESULTEE, whereas *roll* has only a *proc* projection and thus its argument is only an UNDERGOER. Thus, there are not just two possible configurations for intransitive predicates (as suggested under the traditional unaccusative hypothesis), but multiple possibilities.

As a result of this, Ramchand's approach can account for certain of the discrepancies between split intransitivity diagnostics. Not only may the arguments of different predicates appear in more than two different positions – which itself allows for split intransitive diagnostics sensitive to argument structure to pick out more than two classes – the argument of a single given predicate may appear in multiple different positions at once, allowing it to be picked out by multiple argument-structure-sensitive diagnostics even if they are sensitive to different factors.

For example, the causative alternation is on Ramchand's analysis restricted to those intransitive verbs which lack an *init* component. This is independent of telicity, which is connected (in part) to the presence or absence of *res*. Ramchand thus accounts for both diagnostics in structural terms, without making the false prediction that (for example) all intransitives with causative alternants are telic. This prediction is shown to be false by examples such as the following:

(41)    a.  The lollipops melted.

        b.  Lucy melted the lollipops.

(42)    The lollipops melted for hours.

However, there are some patterns Ramchand's approach does not so obviously account for. For example, it does not identify the [+CHANGE] class, which I have argued in favour of in §2.[7] In Baker (2018), I identify this and other problems, arguing at length the patterns are more readily accounted for in terms of a more elaborated sequence of heads. The parallels between Ramchand's and my approach are, however, very strong, even if the particular heads identified are different.

The VISCO hierarchy approach, then, allows diagnostics to pick out overlapping classes without encountering these issues. Recall that verbs like *melt* pattern both with verbs like *work* (in terms of diagnostics of telicity like *for hours*) and with verbs like *break* (in terms of other diagnostics: resultatives, causatives, prenominal past participles). If we assume all of these diagnostics are connected to argument structure, this is difficult – if not impossible – to account for on the assumption that there are only two available argument positions in intransitives. Either telicity or the other diagnostics must be sensitive to argument structure on this more traditional approach; it does not seem that they can both be. However, if we allow for the possibility of multiple argument positions – and specifically multiple "internal" argument positions – we are able to account for both sets of phenomena in argument structure terms.

### 3.4.4  Non-classified verbs

This section considers the problem, for the traditional unaccusative hypothesis, of predicates which apparently cannot be classified as unergative or unaccusative. For the unaccusative hypothesis to be tenable, there should be some way of identifying any given intransitive predicate one way or the other. This is desirable not only from a theoretical perspective (we do not wish to be making claims about the status of predicates on an ad hoc basis) but also from an acquisitional one: the language learner needs some method by which verbs can be identified as belonging to one class or the other.

The obvious method to determine the status of predicates as unergative or unaccusative is via the various "unaccusativity diagnostics", a number of which have already been discussed. These are morphological or syntactic constructions which permit some intransitives to participate but disallow others. But matters

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[7]A reviewer suggests that the [+CHANGE] property as identified by the prenominal past participle diagnostic might be related to the non-finite participle morphology, rather than as part of the extended structure of finite verbs. It seems to me most economical to assume that the structure of finite and non-finite forms does not differ in this way; in any case, this does not account for the apparent operation of the [±CHANGE] feature in other ways.

are not as straightforward as might be hoped. Consider, in English, verbs denoting states. As discussed above, and illustrated in more detail immediately below, these are rather consistently disallowed with both constructions purportedly diagnostic of unergatives (43) and those diagnostic of unaccusatives (44):[8]

(43)   a.  * Lucy remained her way into the room.
       b.  * Lucy was remaining away.
       c.  * Lucy remained a remaining.
       d.  * remainer
       e.  * Lucy outremained Chris.

(44)   a.  * Lucy remained happy. [intended meaning: 'Lucy became happy as a result of remaining']
       b.  * Lucy remained Chris. [intended meaning: 'Lucy made Chris remain']
       c.  * the remained man

Similar observations can be made of many other verbs denoting states: *stay*, *last*, *survive*, *persist*; *sit*, *stand* (in their stative senses), etc. It is true that these do sporadically allow certain of the diagnostic constructions (e.g. *survivor*, *outstay*; *Lucy stood the statue in the corner*), but such behaviours do not seem to form part of any general pattern and it is not clear that they do much to resolve the issue.

There is one diagnostic that does group statives with other verbs: that of telicity. Statives can freely occur with phrases like *for hours*:

(45)   Lucy remained for hours.

But as discussed in §3.4.3, the classes identified by this diagnostic do not line up neatly with those picked out by the other diagnostics: both "unergative" and "unaccusative" verbs can occur with *for hours*, so the telicity diagnostic does not solve the problem.

Of course, it is notionally plausible that the division of predicates into one or the other class derives from some sort of innate knowledge. Such knowledge

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[8]*Remain* and many other statives are permitted with locative inversion and *there*-insertion:

(i)   In the room remained a man.
(ii)  There remained a man.

However, I do not consider these true diagnostics of argument structure: see Levin & Rappaport Hovav (1995); Baker (2018; 2019: Ch. 6).

would most probably be specific to the language faculty – it is hard to see how the mechanisms which allow the linking of semantics to grammatical relations or syntactic argument structure could have any non-linguistic applications. However, appeals of this sort to "Universal Grammar" (UG) are not very compatible with a minimalist approach, which favours an "impoverished" view of UG. This thus avoids the methodological error of appealing to innateness too readily, and failing to seek out deeper explanations. UG is predicted to contain as little as possible, and we ought not to be placing the mechanisms for distinguishing unergatives from unaccusatives within it if better options are available. That is, we ideally do not want a UG principle which states "Intransitive predicates denoting changes and states are unaccusative; others are unergative" or the like.

This sort of UG approach would also run into problems with cross-linguistic variation. If, as seems to be the case, languages vary to some extent as to how they classify intransitives, then it would seem UG would only provide partial information as to how this classification is to proceed. This would leave us with the problem of determining what information is, and is not, in UG – a problem which is by no means easy to solve. This problem is perhaps particularly apparent with intransitives denoting states. State verbs often show a great deal of language-internal variation and apparent lexical idiosyncrasy with regard to split intransitivity diagnostics. In Dutch, for example, some state verbs occur with 'have' and others with 'be':

(46) Dutch (Sorace 2000: 870)

    a. Het beeldje *heeft* op de tafel gestaan.
       the picture has   on the table stood
       'The picture stood on the table.'

    b. Sofie *is* een geode docente gebleken.
       Sofie is a   good teacher seemed
       'Sofie seemed a good teacher.'

Similar observations can be made with regard to case marking of statives in Basque and Georgian (Baker 2018). This suggests UG does not provide much if any help in the classification of these verbs into one of the two purported groups.

Given all this, how can the language learner (or the linguist) determine whether English stative verbs are unergative or unaccusative? They have generally been assumed to belong to the latter class (see Perlmutter 1978: 162–163), but as we have seen there is little positive evidence in support of this, only the negative evidence that they do not generally pattern with the "unergatives".

Another possibility is that UG, or general cognitive procedures, allow for some sort of "default rule", whereby verbs for which there is no positive evidence as to their status are classified into one particular group. However, it is not clear (at least at present) how we might determine which of the two groups is the default, suggesting we ought not to pursue this path if an alternative can be found.

The VISCO approach may be just such an alternative. It does not run into problems with [+STATE] intransitives. As there is no requirement on this approach for these verbs to be classified into one of just two groups, the fact that the diagnostics do not allow us to do so is not problematic. Rather, stative verbs can simply be grouped into a class of their own.

### 3.4.5 Exceptional verbs

Another problem for the unaccusative hypothesis concerns verbs which, having been classified as either unergative or unaccusative, fail to show particular behaviours expected of the group in question. In English, this is particularly problematic for the unaccusative class. Because not all purported "unaccusatives" behave in the same way in relation to the diagnostics, authors working within the unaccusative hypothesis framework must posit reasons for the "exceptional" behaviour of certain sorts of predicate. Thus, for example, Levin & Rappaport Hovav (1995) provide arguments for the incompatibility of resultatives with directed motion (§2.3.2) and stative (§2.3.3) intransitives, and for the incompatibility of the causative alternation with verbs of existence and appearance (§3.3, see especially p. 126). This sort of approach – whereby some members of a class whose members are able to enter into a given construction for one reason (such as the presence of an internal argument/absence of an external argument) are ruled out in that construction for some other reason – is not inherently problematic. L&RH's use of it in this instance, however, runs into various problems.

Firstly, note again that the resultative construction and the causative alternation are available in English with very almost the same class of verbs (see also Baker 2018; 2019):[9]

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[9]The major exception is the class of verbs comprising *redden*, *blacken*, *ripen* etc. which allow causatives but not resultatives:

  (i)     The wood blackened.

  (ii)    The fire blackened the wood.

  (iii)   * The wood blackened black.

   One explanation for this property is that the result state (*red*, *black*, *ripe* etc.) incorporates directly into the verbal element *-en*.

(47)  a.   The butter melted soft.

    b.   The wood burned black.

    c.   The window broke into pieces.

    d.  * Lucy arrived tired. [intended meaning: 'Lucy became tired as a result of arriving']

    e.  * Lucy persisted happy. [intended meaning: 'Lucy became happy as a result of persisting']

(48)  a.   Chris melted the butter.

    b.   Chris burned the wood.

    c.   Chris broke the window.

    d.  * Chris arrived Lucy.

    e.  * Chris persisted Lucy.

This correspondence occurs even with verbs which otherwise appear to be idiosyncratic exceptions to the non-availability of these constructions:

(49)  a.  * Lucy died dead. [intended meaning: 'Lucy became dead as a result of dying']

    b.  * Chris died Lucy.

L&RH's approach, however, does not account for this generalisation of close correspondence between the classes picked out by the two diagnostics. This correspondence cannot be explained simply by claiming that the constructions are only available with "unaccusatives", because the pattern is subtler than that: not all intransitives claimed to have internal arguments allow the two constructions. Further, L&RH's arguments for the incompatibility of resultatives with certain "unaccusatives" do not generalise to the incompatibility of these same verbs with the causative alternation (and vice versa). The inherent delimitation of directed motion verbs may be a satisfactory account of their non-occurrence with resultatives (L&RH: §2.3.2), but it does not seem relevant to the causative alternation; similarly, while it may be reasonable that there are no such things as delimited states and hence no resultatives of statives, as resultatives (§2.3.3), this line of argument does not obviously extend to the lack of causative alternants of stative forms.

    Likewise, L&RH's argument for the non-occurrence of causative alternants of verbs of existence and appearance does not account for the non-occurrence of these verbs with resultatives:

(50)   a. * The ghost appeared white. [intended meaning: 'The ghost became white as a result of appearing']

       b. * Lucy vanished invisible.

L&RH argue (p. 126) that these verbs lack causative alternants because they have neither external nor internal causes, but this is irrelevant to whether they allow resultatives on their analysis (though cf. Ramchand 2008; Baker 2018; 2019). They do not provide any argument for the non-occurrence of causatives with other "unaccusatives".

   To reiterate, then, L&RH fail to capture significant similarities between the behaviour of these two diagnostics. In this respect, then, they can be argued to do less well than the "semantic"-type approaches, which are able to identify features the verbs allowing resultatives and causatives have in common ([+CHANGE, −INITIATION], as I suggested above). The fact that this class can be identified positively in terms of these features alone, rather than positing an unaccusative class and various exceptions, might also seem to favour something more like a semantic approach – or the VISCO approach. We can make a similar argument regarding prenominal past participles, some examples of which are as follows:

(51)   a.   the fallen tree

       b.   the broken window

       c. * the survived man

       d. * the been man

       e. * the swam athlete

L&RH would have to provide some reason to rule these out with statives, whereas the VISCO approach need only state that they are restricted to verbs of change. On this approach, as discussed above, there is no expectation that different split intransitivity diagnostics should all identify more-or-less the same two classes, and indeed this is not what we observe. Accordingly, there is a reduced need to explain away the apparent exceptions: the cases where certain verbs do not behave as their class membership predicts.[10] However, as already noted, the VISCO approach also has the advantage over traditional semantic approaches in that it

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[10] It is true that there are some [+CHANGE, −INITIATION] verbs that do not allow resultatives and/or causatives: among them, *die*, verbs of (dis)appearance and verbs like *redden*, *blacken* etc. There are also exceptions to the rule that [+CHANGE] verbs allow prenominal past participles (*the gone man*, etc.). The number of exceptions to be accounted for is still less than on an approach that treats these constructions as in principle available with all "unaccusatives". See discussion in Baker (2018; 2019).

nevertheless connects class membership to syntactic structure and accordingly is able to account for particular patterns which those other approaches do not.

### 3.4.6 Variation between languages

Variation in split intransitive phenomena has been highlighted by various authors, for example Rosen (1984) cited above, and more recently in the work of Sorace (see particularly Sorace 2000, forthcoming). Sorace (2000) describes variation in auxiliary selection in German, Dutch, Italian and French: these languages all allow either 'be' or 'have' as the auxiliary in the periphrastic perfect, with 'be' traditionally held to occur with unaccusatives and 'have' with unergatives. However, the distribution of 'be' and 'have' is different in each language. The following examples illustrate:

(52)  French
      Il  *a*   courru.
      he has run
      'He ran.'

(53)  German
      Er *ist* gelaufen.
      he is  run
      'He ran.'

Sorace shows, however, that this cross-linguistic variation in amenable to analysis in terms of a hierarchy of semantic categories of intransitive verbs: the auxiliary selection hierarchy (ASH) or split intransitivity hierarchy (SIH) (Sorace & Shomura 2001). This is given in Table 18.2. Whilst the "cut-off point" between 'have' verbs and 'be' verbs varies between languages, in general categories toward the top of the hierarchy are associated with 'have' and those toward the bottom with 'be'.

Further research has shown that the SIH can be applied to split intransitive phenomena other than auxiliary selection (Sorace 2004: 263–264, Montrul 2005), although it may not apply in all cases (Baker 2013; 2018).

Most theoretical accounts of split intransitivity have little to say about what, if any, cross-linguistic variation should be possible. However, as Sorace's work shows, languages not only seem to vary in which predicates show "unergative" and "unaccusative" behaviours, but this variation appears not to be purely random.

Table 18.2: The split intransitivity hierarchy (Sorace 2000)

| | |
|---|---|
| Controlled process (non-motional) | *work, play, talk …* |
| Controlled process (motional) | *swim, run, walk …* |
| Uncontrolled process | *tremble, skid, cough, rumble …* |
| Existence of state | *be, belong, sit …* |
| Continuation of a pre-existing state | *stay, remain, last, survive, persist …* |
| Change of state | *rise, decay, die, grow …* |
| Change of location | *come, arrive, leave, fall …* |

The VISCO hierarchy, however, can be seen as an implementation of the SIH. Categories closer to the top of the SIH correspond to positively valued features of heads towards the top of the VISCO hierarchy, as summarised in Table 18.3 (for further discussion see Baker 2019).

Table 18.3: Correspondences between the SIH and the features encoded on the heads of the VISCO hierarchy

| | [VOLITION] | [INITIATION] | [STATE] | [CHANGE] | [ORIENTED] |
|---|---|---|---|---|---|
| Controlled process (non-motional) | + | + | − | − | − |
| Controlled process (motional) | + | + | − | − | − |
| Uncontrolled process | − | + | − | − | − |
| Existence of state | +/− | +/− | + | − | − |
| Continuation of a pre-existing state | +/− | +/− | + | − | − |
| Change of state | +/− | +/− | − | + | +/− |
| Change of location | +/− | +/− | − | + | + |

This enables explanation of why split intransitive patterns show the patterns of variation they do, something which is not furnished by other theories. This is most easily illustrated with auxiliary selection, which is also the phenomenon best studied with relation to the SIH. The generalisation which can be made is that in languages with a 'have'/'be' split amongst auxiliaries in the periphrastic perfect with intransitives, 'be' is associated with heads below a certain point

when they bear a positively valued feature (e.g. with ᴏʀɪᴇɴᴛᴇᴅ when it bears [+ᴏʀɪᴇɴᴛᴇᴅ], but not where it bears [−ᴏʀɪᴇɴᴛᴇᴅ]); 'have' is then associated with heads bearing a positively valued feature above that point. The cut-off point in question, however, varies between languages.[11]

To briefly summarise this discussion, it has considered the problem of attempting to divide intransitives into just two groups, which is manifest in various ways. It has argued that the VISCO approach, which identifies multiple classes of intransitives in a way which is connected directly to syntactic structure, is able to overcome this problem where other approaches run into difficulties.

## 3.5  The problem of semantics–syntax linking

A further issue with the unaccusative hypothesis as originally proposed concerns the proposed relation between semantics and syntax. The link between the meaning of an intransitive predicate and that predicate's status as unergative or unaccusative is not nearly as straightforward as might be thought ideal. The proposed unergative and unaccusative classes each divide into a number of subgroups, and the semantic characterisations of each are somewhat heterogeneous: there is no immediately apparent semantic feature that all the predicates in one of the classes possess and all the others lack. Thus, the semantic criteria that Perlmutter (1978) provides (17–18) are not necessarily very informative – in particular, the notion of "semantic patient" (18b) is unhelpfully vague. And some of the classifications seem rather arbitrary – why, for example, should "involuntary bodily processes" be unergative rather than unaccusative?

This problem is overcome somewhat by Levin & Rappaport Hovav (1995). Considering a number of diagnostics in a high level of detail, primarily although not exclusively in regard to English, L&RH argue in favour of a traditional interpretation of unaccusativity, where the two classes of intransitive predicates (unergative and unaccusative) are both semantically determined and syntactically represented.

The mapping of semantics to syntax on L&RH's approach is achieved via "linking rules" (Ch. 4). The rules that L&RH identify are as follows:

(54)   a.   Directed change linking rule
            "The argument of a verb that corresponds to the entity undergoing
            the directed change described by that verb is its direct internal
            argument." (p. 146)

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[11]This does not by itself account for all the patterns captured by the SIH; for further discussion of how this may be done on a TFH approach see Baker (2018).

b. Existence linking rule
"The argument of a verb whose existence is asserted or denied is its direct internal argument." (p. 153)

c. Immediate cause linking rule
"The argument of a verb that denotes the immediate cause of the eventuality described by the verb is its external argument." (p. 135)

d. Default linking rule
"The argument of a verb that does not fall under the scope of any of the other linking rules is its direct internal argument." (p. 154)

To summarise, with examples of verbs whose arguments are typically subject to each rule:

(55)   a. argument undergoing directed change → direct internal argument
<div align="right">e.g. *break*</div>

b. argument whose existence asserted/denied → direct internal argument      e.g. *appear*

c. immediate cause → external argument      e.g. *play*

d. other argument → direct internal argument      e.g. *bounce*

These rules are ordered (L&RH: §4.2). Thus, for example, the directed change linking rule (54a, 55a) takes precedence over the immediate cause linking rule (54b, 55b) in at least some languages (L&RH: 159–164, 166). Thus an entity which both undergoes a direct change and is an immediate cause of the eventuality is represented by an internal argument, not an external one. This is apparent, for example, in the case of Italian *cadere* 'to fall' which takes auxiliary *essere* 'to be' (associated with unaccusatives) even when agentive (L&RH: 163):

(56)   Italian
Luigi è caduto apposta.
Luigi is fallen on.purpose
'Luigi fell on purpose.'

In summary, on L&RH's approach intransitive predicates with an immediate cause argument are unergative *unless* that argument also undergoes a directed change or has its existence asserted or denied. All other intransitives are unaccusative.

The principal advantage, then, of L&RH's approach – as opposed to previous attempts to characterise unaccusativity – is an explicit characterisation of the

different behaviour of different intransitive predicates in semantic terms, whilst however directly relating these behaviours to the syntactic property of the position of arguments. L&RH are thus able to maintain certain advantages of the "semantic" approach, whilst overcoming some of its weaknesses by building on existing insights into syntactic determinants of split intransitive phenomena. Furthermore, the semantic characterisation it presents is relatively straightforward – relying only on the concepts of "direct change", "immediate causation" and "assertion/denial of existence". This compares favourably to the numerous semantic categories identified by Perlmutter (1978), allowing significant generalisations to be made as to which predicates fall in which class.

The linking rules approach is not without weaknesses of its own, however. Some of these concern the rules themselves (I will discuss other weaknesses subsequently). Now, it seems undeniable that we need some way of linking semantics to syntax if split intransitivity is indeed sensitive to both. The idea of linking rules is not problematic per se. But the specific forms of the rules L&RH suggest are. They seem largely accurate in describing the classes of verbs which show "unergative" and "unaccusative" behaviours: though they have some weaknesses even in this regard, which I shall discuss below. But despite this strength in terms of purely descriptive classification, it is difficult to come up with independent, explanatory reasons for why they should have the forms they do. Why are they sensitive to these semantic factors, and not others? One can think of plenty of other factors which might just as well be candidates (e.g. volition, sentience, eventivity/stativity, telicity, affectedness; "change" as a general concept rather than directed change specifically).[12] The basis for the connections between these semantic factors and the external/internal argument distinctions are in some cases similarly unclear. Why, for example, should assertion of existence be a criterion that yields unaccusatives, and not unergatives? Neither is it easy to justify the order of the rules. Why should the directed change linking rule take precedence over the immediate cause linking rule, and not vice versa?

These are problematic issues from an acquisitional perspective. The forms of the rules – the semantic features they make reference to, the mapping to external or internal arguments, their ordering – seem rather arbitrary. This arbitrariness can only make the acquisition process more difficult, particularly when the data that are available to help language learners classify predicates one way or the other are often limited at best.

A potential source of evidence for the mapping one way or the other is the behaviour of arguments of transitive verbs: most clearly for the directed change

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[12]L&RH do discuss (§4.3.1) their reasoning for rejecting some of these, but this does not explain why language learners do not posit them.

linking rule, as transitive arguments which undergo directed changes are internal arguments, for example *the city* in the following case:

(57)    Hannibal destroyed the city.

But this reasoning may not generalise to all the rules. True, causes and "other" arguments are generally external and internal arguments of transitives respectively, as in the following example:

(58)    Lucy touched the wall.

Here, *Lucy* (the external argument) is the immediate cause of the event and *the wall* (the internal argument) does not come under the scope of any of the rules. Instances like this could allow the derivation of the immediate cause and default linking rules. But psych predicates pose a problem, for example:

(59)    Sarah loves Chris.

Here, *Sarah* (the external argument) is not necessarily best analysed as a cause, and *Chris* (the internal argument) may well be. Thus the mapping to syntactic positions exhibits the opposite pattern from that the linking rules would generate. It is also not clear if transitives provide any evidence as to the status of an argument of which existence is asserted or denied.

One solution would be to posit that the linking rules, and maybe their order as well, are encoded in Universal Grammar. But this does not seem very attractive, particularly if a better proposal can be made. Most linguists today would probably reject such a "rich UG" approach.

Ideally, perhaps, learners would have access to some sort of generalised linking rule format on which all the rules might be based (this might be either innate or emergent). It is not clear that L&RH's linking rules can be reduced to a satisfactory general format: certainly there does not seem to be one which overcomes the problems of the arbitrariness of the semantic factors and of whether each factor maps to external or internal arguments. The issue of the ordering of the rules would remain problematic in any case.

In Baker (2018; 2019), however, I propose exactly this sort of "generalised linking rule" which, utilising a VISCO-type hierarchy, overcomes these problems with L&RH's rules:

(60)    Generalised linking rule
        An argument of which the property [+a] is predicated is merged in the
        corresponding Spec,AP.

The properties [+a] in question are the features [+VOLITION], [+INITIATION] etc.; the corresponding APs are VolitionP, InitiationP, etc. The general format of the rule allows for much easier acquisition, and there is no need to order the rules so that certain semantic features take precedence over others, which obviates the need to justify such a rule ordering, or for learners to acquire it. (Where two properties are predicated of an argument – say, [+INITIATION] and [+CHANGE] – that argument is simply merged in both corresponding positions, as discussed above.)

The VISCO approach does not require us to posit seemingly arbitrary associations of semantic properties to external or internal argument positions: on this approach, the two-way division between "external" and "internal" arguments is too simplistic. A related issue does still present itself, however: why are the heads ordered in the way they are? (Note that this is a problem here only with the syntactic structure itself – it is external to the linking rules.) From an acquisitional perspective, however, it is not such an issue as it might first appear: there is ample evidence from transitive and ditransitive clauses for the order of at least some of the heads in the hierarchy.[13] For example, θ-INITIATION arguments always seem to be merged higher than θ-CHANGE ones:

(61)    Hannibal destroyed the city.
        θ-INITIATION        θ-CHANGE

This allows the learner to posit InitiationP as being higher in the structure than ChangeP. See Baker (2018) for in-depth discussion.

As to why the particular order of heads should have come about in the first place, I admit I do not have a full explanation. Such deep explanations for the ordering of heads in syntactic structures are of course a more general issue not restricted to the particular subpart of sentence structure posited here. One partial explanation may be that the heads higher in the structure (e.g. VOLITION, INITIATION) relate more to the properties of the arguments themselves, whereas the lower heads (e.g. CHANGE, ORIENTED) say more about the properties of the event. But this is incomplete and subject to criticism. Overall, however, the VISCO approach, with the generalised linking rule, allows a neat way of capturing the linking between semantics and syntax which does not run into some of the problems encountered by previous accounts.

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[13]I admit I am not aware of much good language-internal evidence for the relative order of, firstly, VOLITION and INITIATION and, secondly, CHANGE and ORIENTED – though see §3.4.4 for some cross-linguistic evidence for the orders posited. It is not clear that much hinges on which orders the learner adopts in these cases, however.

## 4  Conclusion

Perlmutter's (1978) unaccusative hypothesis has remained a powerful idea since its inception. Numerous linguistic phenomena have shown themselves to be amenable to analysis in terms of unaccusativity. But the hypothesis, and subsequent implementations and adaptations of it, have also proved problematic in various ways. My approach to split intransitivity, captured in terms of the VISCO hierarchy, overcomes many of these difficulties by positing more fine-grained distinctions in syntactic structure. However, it retains key elements of the original unaccusative hypothesis: the idea that split intransitive behaviours are semantically determined but syntactically encoded, specifically in terms of "grammatical relations" here formalised (after Burzio 1986 and many others) in terms of argument positions. The VISCO approach to split intransitivity should be seen, therefore, not as a radical alternative to the unaccusative hypothesis but as a development of it.

## Abbreviations

| | | | | |
|---|---|---|---|---|
| 1 | first person | | NOM | nominative |
| 3 | third person | | PART | partitive |
| ABS | absolutive | | PL | plural |
| ACC | accusative | | PRF | perfect |
| ASH | auxiliary selection hierarchy | | SG | singular |
| ERG | ergative | | SIH | split intransitivity hierarchy |
| GB | government-and-binding theory | | TFH | thematic functional hierarchy |
| INVOL | involuntary | | UG | Universal Grammar |
| M | masculine | | VOL | voluntary |

## References

Baker, James. 2013. *Theoretical approaches to alignment, with special reference to split/fluid-S systems*. University of Cambridge. (Undergraduate dissertation).

Baker, James. 2016. Split intransitivity in English. *Cambridge Occasional Papers in Linguistics* 9. 1–34.

Baker, James. 2018. *Split intransitivity: Thematic roles, case and agreement*. University of Cambridge. (Doctoral dissertation).

Baker, James. 2019. Split intransitivity in English. *English Language and Linguistics* 23(3). 557–589. DOI: 10.1017/S1360674317000533.

Bentley, Delia. 2004. *Ne*-cliticisation and split intransitivity. *Journal of Linguistics* 40(2). 219–262. DOI: 10.1017/S002222670400252X.

Borer, Hagit. 2005. *The normal course of events* (Structuring sense 2). Oxford: Oxford University Press.

Burzio, Luigi. 1981. *Intransitive verbs and Italian auxiliaries*. Massachusetts Institute of Technology. (Doctoral dissertation).

Burzio, Luigi. 1986. *Italian syntax: A government–binding approach*. Dordrecht: Kluwer.

DeLancey, Scott. 1984. Transitivity and ergative case in Lhasa Tibetan. *Proceedings of the Annual Meeting of the Berkeley Linguistics Society* 10. 131–140. DOI: 10.3765/bls.v10i0.1976.

Harris, Alice C. 1981. *Georgian syntax*. Cambridge: Cambridge University Press.

Harris, Alice C. 1982. Georgian and the unaccusative hypothesis. *Language* 58(2). 290–306. DOI: 10.2307/414100.

Kiparsky, Paul. 1998. Partitive case and aspect. In Miriam Butt & Wilhelm Geuder (eds.), *Projecting from the lexicon*. Stanford: Center for the Study of Language & Information.

Levin, Beth & Malka Rappaport Hovav. 1995. *Unaccusativity: At the syntax–lexical semantics interface*. Cambridge, MA: MIT Press.

Montrul, Silvina. 2005. On knowledge and development of unaccusativity in Spanish L2 acquisition. *Linguistics* 43(6). 1153–1190. DOI: 10.1515/ling.2005.43.6.1153.

Perlmutter, David M. 1978. Impersonal passives and the unaccusative hypothesis. *Proceedings of the Annual Meeting of the Berkeley Linguistics Society* 4. 157–190. DOI: 10.3765/bls.v4i0.2198.

Perlmutter, David M. 1989. Multiattachment and the unaccusative hypothesis: The perfect auxiliary in Italian. *Probus* 1(1). 63–119. DOI: 10.1515/prbs.1989.1.1.63.

Perlmutter, David M. & Paul M. Postal. 1984. The 1-advancement exclusiveness law. In David M. Perlmutter & Carol Rosen (eds.), *Studies in Relational Grammar 2*, 81–125. Chicago: University of Chicago Press.

Ramchand, Gillian. 2008. *Verb meaning and the lexicon: A first phase syntax*. Cambridge: Cambridge University Press. DOI: 10.1017/CBO9780511486319.

Rosen, Carol. 1984. The interface between semantic roles and initial grammatical relations. In David M. Perlmutter & Carol Rosen (eds.), *Studies in Relational Grammar 2*, 38–77. Chicago: University of Chicago Press.

Schoorlemmer, Maaike. 2004. Syntactic unaccusativity in Russian. In Artemis Alexiadou, Elena Anagnostopoulou & Martin Everaert (eds.), *The unaccusativ-*

*ity puzzle: Explorations of the syntax–lexicon interface*, 207–242. Oxford: Oxford University Press.

Sorace, Antonella. 2000. Gradients in auxiliary selection with intransitive verbs. *Language* 76(4). 859–890.

Sorace, Antonella. 2004. Gradience at the lexicon-syntax interface: Evidence from auxiliary selection and implications for unaccusativity. In Artemis Alexiadou, Elena Anagnostopoulou & Martin Everaert (eds.), *The unaccusativity puzzle: Explorations of the syntax–lexicon interface*, 243–268. Oxford: Oxford University Press.

Sorace, Antonella & Yoko Shomura. 2001. Lexical constraints on the acquisition of split intransitivity: Evidence from L2 Japanese. *Studies in Second Language Acquisition* 23(2). 247–278. DOI: 10.1017/S0272263101002066.

Tenny, Carol L. 1987. *Grammaticalizing aspect and affectedness*. MIT. (Doctoral dissertation).

Van Valin, Robert D. Jr. 1990. Semantic parameters of split intransitivity. *Language* 66(2). 221–260.

van Craenenbroeck, Jeroen. 2009. Alternatives to cartography. In Jeroen van Craenenbroeck (ed.), *Alternatives to cartography*, 1–14. Berlin: De Gruyter. DOI: 10.1515/9783110217124.1.

Zaenen, Annie. 1988. *Unaccusative verbs in Dutch and the syntax–semantics interface (report no. 88-123)*. Stanford, CA: Center for the Study of Language & Information.

Zaenen, Annie. 1993. Unaccusativity in Dutch. In James Pustejovsky (ed.), *Semantics and the lexicon*, 129–162. Dordrecht: Springer.