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The Unaccusative Hypothesis vs. Lexical Semantics:  
Syntactic vs. Semantic Approaches to Verb Classification

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1.0 Introduction<sup>1</sup>

The purpose of this paper is to argue that the phenomena which the Unaccusative Hypothesis [UH] strives to explain in syntactic terms are better accounted for in terms of the lexical theory of verb semantics presented in Dowty (1979), as modified and extended in Foley & Van Valin (1984). The UH was proposed in Perlmutter (1978) to account for the fact that intransitive verbs do not constitute a homogeneous class. Initially developed in Relational Grammar [RG], it was adapted into Government-Binding theory [GB] in Burzio's work on Italian (1981, 1983, 1986). The UH claims that there are two types of intransitive verbs, and in both theories the differences between them is characterized in purely syntactic terms: in one type the surface subject is also the underlying subject, and in the other the surface subject is the underlying direct object. This is expressed differently in the two theories. In RG, unaccusative verbs are analyzed as having an initial 2 (direct object) but no 1 (subject), as in (1a), as opposed to 'unergative' verbs which have an initial 1 but no 2, as in (1b); in GB, on the other hand, unaccusative verbs ('ergative' in Burzio's terminology) occur in the D-structure in (1a'), while other intransitive verbs appear in that in (1b'), the configurational equivalents of the RG initial strata.

- (1) Unaccusative: a. Initial: V 2    a'. [<sub>S</sub> [<sub>NP</sub> e] [<sub>VP</sub> V NP ]]
- b. Initial: V 1    b'. [<sub>S</sub> NP [<sub>VP</sub> V ]]

While Perlmutter (1978) initially suggested that there is a semantic basis for the unaccusative-unergative distinction, subsequent discussions, especially Rosen (1984), have concluded that there is no consistent, universally characterizable semantic basis for it. Moreover, all advocates of the UH have argued that the phenomena which the UH seeks to account for cannot be adequately dealt with in terms of semantic roles/thematic relations.

The discussion will proceed as follows. §2 introduces the system of verbal classification and semantic representation proposed in Dowty (1979). §3 deals with a number of issues in Italian syntax related to the UH, first and foremost the question of perfect auxiliary selection with intransitive verbs. §4 looks at arguments advanced in support of the UH based on data from Georgian, and §5 involves a brief look at the intransitive split in Tsova-Tush (better known as Bats or Batsbi) and Acehnese. Conclusions are presented in §6.

## 2. The Dowty system of verb classification

Dowty (1979) presents a lexical semantic theory of verb classification based on the Vendler (1967) classification of verbs into states, achievements, activities and accomplishments. Examples from Dowty of members of each class are given in (2), and the syntactic and semantic tests for class membership which Dowty proposes are given in Table I.

Criterion	States	Activ	Accomp	Achiev
1. meets non-stative tests:	no	yes	yes	?
2. has habitual interpretation in simple present tense:	no	yes	yes	yes
3. $\phi$ for an hour/spend an hour $\phi$ ing:	OK	OK	OK	bad
4. $\phi$ in an hour/take an hour to $\phi$	bad	bad	OK	OK
5. $\phi$ for an hour entails $\phi$ at all times in the hour:	yes	yes	no	d.n.a.
6. $x$ is $\phi$ ing entails $x$ has $\phi$ ed:	d.n.a.	yes	no	d.n.a.
7. complement of <i>stop</i> :	OK	OK	OK	bad
8. complement of <i>finish</i> :	bad	bad	OK	bad
9. ambiguity with <i>almost</i> :	no	no	yes	no
10. $x$ $\phi$ ed in an hour entails $x$ was $\phi$ ing during that hour:	d.n.a.	d.n.a.	yes	no
11. occurs with <i>studiously</i> , <i>attentively</i> , <i>carefully</i> , etc.	bad	OK	OK	bad

OK = the sentence is grammatical, semantically normal  
 bad = the sentence is grammatical, semantically anomalous  
 d.n.a = the test does not apply to this class of verbs

Table I (Dowty 1979:60)

643 THE UNACCUSATIVE HYPOTHESIS VS. LEXICAL SEMANTICS

(2) <i>States</i>	<i>Activities</i>	<i>Accomplishments</i>	<i>Achievements</i>
know	run	paint a picture	recognize
believe	walk	make a chair	spot
have	swim	draw a circle	find
desire	push a cart	recover from illness	lose
love	drive a car	deliver a sermon	die

Dowty attempts to provide an explanation for the organization of verbs into these classes:

The idea is that the different aspectual properties of the various kinds of verbs can be explained by postulating a single homogeneous class of predicates --*stative predicates*--plus three or four sentential operators and connectives. English stative verbs are supposed to correspond directly to these stative predicates in logical structure, while verbs of other categories have logical structures that consist of one or more stative predicates embedded in complex sentences formed with the 'aspectual' connectives and operators. (1979:71)

Each verb class is given a formal representation which is called its *logical structure* [LS]. The operators and connectives employed are: BECOME, which indicates inchoativeness; DO, taken from Ross (1972), which indicates agency; and CAUSE, which indicates a causal relation between two events. The formal representations for the four classes are given in Table II.

Verb Class	Logical Structure
State	<b>predicate'</b> (x,(y)) <sup>2</sup>
Achievement	BECOME <b>predicate'</b> (x,(y))
Activity (agentive)	DO (x, [ <b>predicate'</b> (x,(y))])
Accomplishment	φ CAUSE ψ, where φ is normally an activity verb and ψ an achievement verb

Table II

On this scheme, achievement verbs are derived from state verbs by the addition of the operator BECOME; the argument structure of the stative predicate is unaffected. Achievement LSs are in turn a component of accomplishment verb LSs. This relationship among the three classes is realized in many set of verbs; in some cases the relationship among the verbs is morphologically transparent, e.g. Y [be] cool (state), Y cool (achievement), and X cool Y (accomplishment), and in others it is not, e.g. see (state), notice (achievement), and show (accomplishment). For the most part, activity verbs are not derived from stative predicates but are represented as primitive predicates in their own right. Examples of English verbs of all four types and their LSs are given in (3).

- (3) a. *States*  
 The clock is broken. **broken'** (clock)  
 The book is on the table. **be-on'** (book, table)  
 Fred is at the house. **be-at'** (Fred, house)  
 John saw the book. **see'** (John, book)
- b. *Achievements*  
 The clock broke. BECOME **broken'** (clock)  
 Fred arrived at the house. BECOME **be-at'** (Fred, house)  
 The book fell on the floor. BECOME **be-on'** (book, floor)  
 John noticed the book. BECOME **see'** (John, book)
- c. *Activities*  
 The children cried. **cry'** (children)  
 Fred ran. DO (Fred, [**run'** (Fred)])  
 The wheel squeaks. **squeak'** (wheel)  
 Max did something. DO (Max, [**do'** (Max)])  
 John carried the books. DO (John, [**carry'** (John, books)])
- d. *Accomplishments*  
 Jane threw the book on the table.  
 [DO (Jane, [**throw'** (Jane, book)])] CAUSE [BECOME **be-on'** (book, table)]  
 Fred ran to the house.  
 [DO (Fred, [**run'** (Fred)])] CAUSE [BECOME **be-at'** (Fred, house)]  
 The child broke the clock [accidentally].  
 [**do'** (child)] CAUSE [BECOME **broken'** (clock)]  
 Mary showed the book to John.  
 [DO (Mary, [**do'** (Mary)])] CAUSE [BECOME **see'** (John, book)]

**Do'** is a generalized activity verb much like English *do*; it is used primarily in accomplishment LSs when the nature of the causing activity is not specified. It is not found in Dowty (1979) and was introduced in Foley & Van Valin (1984).

While these LSs are based on the four-way Vendler classification, Dowty ends up proposing a slightly different classificatory scheme, using agency and temporal properties in an interval semantics as the primary criteria. The resulting classification is given in Table III.

	Non-Agentive	Agentive
States	1a. <i>be asleep in the garden; love, know</i>	2a. possibly <i>be polite, be a hero, etc. belong here, or in 4.</i>
	1b. interval statives: <i>sit, stand, lie</i>	2b. interval statives: <i>sit, stand, lie</i> (with human subject)
Activities	3. <i>make noise, roll, rain</i>	4. <i>walk, laugh, dance</i> (cf. 2a)
Single change of state	5. <i>notice, realize, ignite</i>	6. <i>kill, point out</i> (something to someone)
Complex change of state	7. <i>flow from x to y, dissolve</i>	8. <i>build (a house), walk from x to y, walk a mile</i>

THE UNACCUSATIVE HYPOTHESIS VS. LEXICAL SEMANTICS

- I *Momentary* (1a and 'habituals' in all classes) vs. *interval* predicates (1b, 2b, 3-8). Syntactic test: ability to occur in the progressive. (Note: 6 and especially 5 appear less readily in the progressive than other interval predicates.)
- II Predicates entailing *definite* or *indefinite change* 3-8 vs. those entailing *no change* (1 and 2). Syntactic test: ability to occur in *do* constructions (pseudo-clefts, *do so* reduction, etc.).
- III *Definite change of state* predicates (5-8) vs. *activity* predicates or *indefinite change of state* predicates (3 and 4). Syntactic test: does *x was Ving* (pragmatically) entail *x has Ved?*
- IV *Singularly change* predicates (5-6) vs. *complex change* predicates. Syntactic test: Is *x finished Ving* acceptable?
- V *Agentive* (2,4,6,8) vs. *non-agentive* (1,3,5,7) predicates. Syntactic test: ability to occur in agentive contexts like imperatives, *persuade x to V*, *do V deliberately*, etc.

Table III (Dowty 1979:184)

3. Auxiliary selection with intransitive verbs in Italian

The question of auxiliary selection with intransitive verbs in Italian has figured prominently in discussions of the UH. Italian intransitive verbs fall into three classes in terms of which auxiliary verb they take in the perfect tenses: *avere* 'have', *essere* 'be', or both. Examples are given in (4). (Unless otherwise noted, all examples are taken from Centineo (1986).)

- (4) a. Verbs that take *avere* ('A-verbs')
 

<i>parlare</i> 'talk'	<i>ruggire</i> 'roar'
<i>piangere</i> 'smile'	<i>camminare</i> 'walk'
<i>ballare</i> 'dance'	<i>viaggiare</i> 'travel'
- b. Verbs that take *essere* ('E-verbs')
 

<i>arrivare</i> 'arrive'	<i>piacere</i> 'like'
<i>affondare</i> 'sink'	<i>rimanere</i> 'remain'
<i>morire</i> 'die'	<i>annegare</i> 'drown'
- c. Verbs that take either *avere* or *essere* ('A/E-verbs')
 

<i>correre</i> 'run'	<i>volare</i> 'fly'
<i>saltare</i> 'jump'	<i>fiorire</i> 'bloom'

In both RG and GB, the explanation for the selection of an auxiliary by a particular verb is based on the UH. Burzio (1986) identifies unaccusative verbs by means of whether the subject of an intransitive verb can be replaced by the clitic *ne*, as in (5).

- (5) a. Molti esperti arriveranno. 'Many experts will arrive.'  
many experts arrive.FUT.3pl
- b. Ne arriveranno molti. 'Many of them will arrive.'  
PART arrive.FUT.3pl many
- (6) a. Molti esperti telefoneranno. 'Many experts will telephone.'  
many experts telephone.FUT.3pl

- b. \*Ne telefoneranno multi. 'Many of them will telephone.'  
PART telephone.FUT.3pl many

Quantified direct objects can also undergo *ne*-cliticization, and the grammaticality of (5b) as opposed to (6b) is cited by Burzio as evidence that in the D-structure *multi esperti* is an object in (5) but not in (6), i.e. it has the D-structure (1a'); hence *ne*-cliticization is a test for unaccusativity on Burzio's analysis. The movement of the of the D-structure object to subject position creates a binding relation around the verb, and Burzio's claim regarding auxiliary selection is that "the auxiliary will be realized as *essere* whenever a 'binding relation' exists between the subject and a 'nominal contiguous to the verb'." (1986:55) In RG, *essere* is selected when a clause "contains a l-arc and an object arc with the same head" (Rosen 1984:46). In both approaches, *ne*-cliticization is taken to be a reliable correlate of auxiliary selection and hence of unaccusativity. The crucial claim is that unaccusative/ergative verbs select *essere*, while unergative/intransitive verbs select *avere*. These analyses cover not only auxiliary selection with these intransitive verbs but also in passive clauses and *si*-reflexive constructions.

In the lexical semantic theory verbs are classified on the basis of their inherent *aspectual* properties (*Aktionsart*), and in these terms the A-verbs in (4a) are all activity verbs and the E-verbs in (4b) are all state or achievement verbs. *Piacere* 'like' and *rimanere* 'remain' are stative, and *arrivare* 'arrive', *affondare* 'sink', *annegare* 'drown', and *morire* 'die' are all achievements (cf. (2), (3b)). The verbs in (4a) occur with the time adverbial *per X* 'for [some period of time]' (test 3 in Table I), as in (7a), while the achievement verbs do not, as in (7b).

- (7) a. Angela ha parlato/pianto/ballato/camminato per/\*in un' ora.  
has talked/cried/danced/walked for/in an hour  
'Angela talked/cried/danced/walked for/\*in an hour.'  
b. Angela è arrivata/annegata/morta \*per/in un' ora.  
is arrived/drowned/died for/in an hour  
'Angela arrived/drowned/died \*for/in an hour.'

The achievement verbs of (4b) and (7b) are compatible with the *in X* 'in [some period of time]' temporal adverbial expression but not *per X*, following tests 3 and 4 in Table I. Logical structures for some of the verbs in (4a,b) are given in (8).

- |                       |                      |             |
|-----------------------|----------------------|-------------|
| (8) a. stare 'stay'   | be-at' (x,y)         | State       |
| b. morire 'die'       | BECOME dead' (x)     | Achievement |
| c. arrivare 'arrive'  | BECOME be-at' (x,y)  | Achievement |
| d. singhiozzare 'sob' | sob' (x)             | Activity    |
| e. ballare 'dance'    | DO (x, [dance' (x)]) | Activity    |
| f. camminare 'walk'   | DO (x, [walk' (x)])  | Activity    |

Thus the Dowty classification schema provides the basis for a lexical semantic account of the verb class distinctions in (4a) and (4b).

## 647 THE UNACCUSATIVE HYPOTHESIS VS. LEXICAL SEMANTICS

The verbs in (4c) provide a set of interesting problems which illustrate a major difference between the two proposals. Examples of these verbs are given in (9)-(11).

- (9) a. Luisa ha corso nel parco. 'Luisa ran in the park.'  
       has run in.the park  
       b. Luisa è corsa a casa. 'Luisa ran home.'  
           is run to home
- (10) a. L' uccello ha volato solo per qualche minuto.  
        the bird has flown only for some minute  
        'The bird flew just for a few minutes.'  
        b. L' uccello è volato via. 'The bird flew away.'  
           the bird is flown away
- (11) a. Ida ha saltato sul letto.  
        has jumped on.the bed  
        'Ida jumped [up and down] on the bed.'  
        b. Ida è saltata dalla finestra.  
           is jumped from.the window  
        'Ida jumped out of the window.'

With respect to verbs that take either *avere* or *essere* (A/E-verbs), the only analysis possible in terms of the UH is to claim that there are simply two verbs *correre* 'run', *saltare* 'jump', *volare* 'fly', etc., one being unaccusative and the other unergative/intransitive. This is the position of Burzio (1981, 1986).<sup>3</sup> Rosen (1984) discusses pairs of sentences like (9a,b), calling the A/E-verbs "a small, idiosyncratic group", but she does not say explicitly that they would be treated as distinct verbs in the lexicon; however, on the assumption that verbs are listed in the lexicon with information regarding their initial grammatical relations, no other option is open. This might not seem a particularly significant issue, given the propensity of many current syntactic theories to posit multiple lexical entries for verbs and the small number of A/E-verbs in Italian.

The analysis of the A/E-verbs in the lexical semantic theory is very different. One of the many alternations across classes discussed in Dowty (1979) is that involving activity and accomplishment verbs, as in e.g. *John ate spaghetti* (activity) vs. *John ate the spaghetti/a plate of spaghetti* (accomplishment). With intransitive verbs of motion the same alternation is found; in this case the contrast concerns whether the motion is bounded by a determinate starting or ending point. This is illustrated in (12) and (13).

- (12) a. John walked in the park. (Activity)  
       b. John walked in the park for an hour.  
       c. John spent an hour walking in the park.  
       d. \*John walked in the park in an hour.
- (13) a. John walked to the park. (Accomplishment)  
       b. John walked to the park in an hour.  
       c. It took John an hour to walk to the park.  
       d. \*John walked to the park for an hour. [≠ iterative]



ROBERT D. VAN VALIN, JR.

Tests 3 and 4 from Table I show that when a motion verb like *walk* is used without a goal adverbial, as in (12), it is an activity verb, and that when it occurs with a definite goal, as in (13), it is an accomplishment verb. The LSs for these two uses of *walk* are the same as those for the verb *run* in (3b) and (3d). The activity LS of the motion verb functions as the  $\phi$  activity LS in the accomplishment  $\phi$  CAUSE  $\psi$  LS. The  $\psi$  LS, BECOME *be-at'* (Fred, house), in (3d) is the same as the LS for *arrive* in (3b). Thus motion-to-a-goal accomplishment verbs have a LS consisting of a motion activity LS and the achievement LS of *arrive*.

The A/E-verbs in Italian fall into several groups, the primary concern here being the motion verbs. The A/E-motion verbs behave just like their English counterparts in (3), (12) and (13) in exhibiting an alternation between activity and accomplishment semantics. This is illustrated in (14) and (15) with *correre* 'run'.

- (14) a. Luisa ha corso nel parco per/\*in un' ora.  
           has run in.the park for/in an hour  
           'Luisa ran in the park for/\*in an hour.'  
       b. DO (Luisa, [*run'* (Luisa)])
- (15) a. Luisa è corsa a casa in/per un' ora.  
           is run to house in/for an hour  
           'Luisa ran home in/for an hour.' [with *per* = 'at home for  
           an hour', not 'running for an hour']  
       b.  
       [DO (Luisa, [*run'* (Luisa)])] CAUSE [BECOME *be-at'* (Luisa, house)]

As with the verbs in (4a), *avere* correlates with an activity verb interpretation. Since the activity LS DO (Luisa, [*run'* (Luisa)]) is common to both (14) and (15), it is obviously not a factor in auxiliary selection in (15). Rather, it is the presence of the achievement LS BECOME *be-at'* (Luisa, house) in (15) which determines the choice of the auxiliary. This is the same LS as *arrivare* 'arrive', an E-verb (cf. (8c)). Thus, with the A/E-motion verbs, the choice of auxiliary is a direct function of whether the verb has activity or accomplishment semantics. This, contra Rosen, is not an idiosyncratic alternation, because (1) the activity/accomplishment alternation is very general and extensively attested cross-linguistically, e.g. Sama (Walton 1986), Georgian (Samsel 1987), and English, and (2) the specific bounded vs. unbounded motion contrast correlating with accomplishment vs. activity semantics is likewise general and well-attested. The explanation which the lexical semantic analysis provides for these Italian facts shows it to be superior to the unaccusative account, which treats them as idiosyncrasies of a specific set of verbs.

Centineo (1986) presents a detailed account of auxiliary selection in Italian in Role and Reference Grammar, a theory which makes crucial use of the Dowty system, and I will simply summarize her conclusions here. The generalization covering intransitive verbs and passive constructions is paraphrased in (16).<sup>4</sup>

## THE UNACCUSATIVE HYPOTHESIS VS. LEXICAL SEMANTICS

- (16) When the subject of a clause is the argument of a stative predicate in logical structure, *essere* is used.

A glance at the LSs in (8), (14) and (15) shows this to be the case with respect to the intransitive verbs under consideration here. In the activity verb LSs in (8d,e,f) and (14b), the subject is not the argument of a stative predicate, and the auxiliary is *avere*. In (8a,b,c) and (15b), on the other hand, the subject is the argument of a stative predicate, and as predicted *essere* is the auxiliary. The most interesting example for this analysis is (15b), in which *Luisa* is the argument of an activity verb, just as in (14b), but is, crucially, also the argument of a stative predicate, hence the choice of *essere* rather than *avere*. In passive constructions, the subject is likewise linked to a state predicate in LS, yielding *essere* as the auxiliary (see Centineo 1986 for detailed discussion).<sup>5</sup>

This analysis thus makes the same predictions as the GB and RG unaccusative analyses regarding auxiliary selection with intransitive verbs and in passive constructions. Hence the syntactic and semantic approaches are both descriptively adequate for the range of phenomena considered so far. There is, however, an important case in which Burzio's *ne*-test fails to make the correct prediction regarding auxiliary selection, namely the verb *essere* itself. As predicted by (16), *essere* as a main verb takes *essere* rather than *avere* as its auxiliary, but it does not allow *ne*-cliticization, as shown in (17b), from Schwartz (1987).

- (17) a. Molti esperti sono buon-i. 'Many experts are good.'  
       many experts be.PRES.3pl good-pl  
       b. \*Ne sono buon-i molti. 'Many of them are good.'  
           PART be.PRES.3pl good-pl many  
       c. Molti esperti sono stat-i buon-i.  
           many experts be.PRES.3pl be.PASTPART-pl good-pl  
           'Many experts were good.'

By Burzio's criterion of *ne*-cliticization, *essere* should be unergative and take *avere* as its auxiliary; but it is not and does not. Moreover, it would be difficult to ascribe the D-structure in (1a') to (17a); one piece of evidence that Burzio gives for (1a') as the D-structure for e.g. (5a) is the free inversion of subjects of unaccusative verbs, as in (18a), something which is very difficult with constructions like (17a).

- (18) a. Arriveranno molti esperti. 'Many experts will arrive.'  
       arrive.FUT.3pl many experts  
       b. ??Sono buon-i molti esperti. 'Many experts are  
           be.PRES.3pl good-pl many experts good.'

The severe oddity of (18b) undermines the plausibility of (1a') as the D-structure of (17a), and if it is not the underlying form of (17a), then there is no binding relation around the verb, and the selection of *essere* as the auxiliary in (17c) is not predicted. Sentences with *essere* as the main verb thus constitute a signifi-

cant exception to Burzio's analysis but not to the lexical semantic analysis.

The passive provides another case in which the two approaches differ. The lexical semantic theory makes an interesting prediction which the syntactic theories do not. Since passive verbs take *essere* as their auxiliary, according to (16) the subject of a passive must be an argument of a stative predicate in LS. As (2), (3) and Table III show, transitive verbs occur in all four major classes. It follows from Centineo's analysis that transitive *activity* verbs should not passivize, because their underlying object argument (2 in RG, internal argument in GB) is not an argument of a stative predicate (cf. the LS of *carry* in (3c)). The contrast between transitive activity and accomplishment verbs in Italian is parallel to that in English (cf. (12), (13)) and is illustrated in (19) and (20). An interesting feature of this contrast is that past participle agreement with the direct object is possible (but not obligatory) with accomplishment verbs but is not possible at all with activity verbs, as (19b) shows. (Cf. Centineo (1986) for detailed discussion.)

- (19) a. Anna ha mangiato spaghetti per/\*in cinque minuti.  
           has eaten                          for/in five minutes  
           'Anna ate spaghetti for five minutes.'  
       b. \*Anna ha mangiat-*i* spaghetti per cinque minuti.  
           has eaten-MPL  
       c. [DO (Anna, [eat' (Anna, spaghetti)])]  
 (20) a. Anna ha mangiato gli spaghetti \*per/in cinque minuti.  
           has eaten the  
           'Anna ate the spaghetti in five minutes.'  
       b. Anna ha mangiat-*i* gli spaghetti in cinque minuti.  
           has eaten-MPL  
       c.  
 [DO (Anna, [eat' (Anna, spaghetti)])] CAUSE [BECOME NOT **be'** (spaghetti)]

By the 'for/in' time adverbial test, (19a) is clearly an activity verb and (20a) an accomplishment verb. In (19c) *spaghetti* is the second argument of the activity predicate **eat'**, whereas in (20c) it is also the single argument of the stative predicate **be'**. Since passive verbs take *essere* as their auxiliary, only (20a,b) but not (19a) should be able to be passivized, and this is the case, as (21) shows.

- (21) a. Gli spaghetti sono stat-*i* mangiat-*i* da Anna in cinque minuti.  
           the                  are been-MPL eaten-MPL by          in five minutes  
           'The spaghetti was eaten by Anna in five minutes.'  
       b. \*Spaghetti sono stat-*i* mangiat-*i* da Anna per cinque minuti.  
           are been-MPL eaten-MPL  
           'Spaghetti was eaten by Anna for five minutes.'

It is difficult to see how this contrast could be predicted in the GB and RG analyses. In RG terms, *spaghetti* is the initial 2 in (19a) and *gli spaghetti* is the initial 2 in (20a), and yet the RG passive rule of 2 → 1 applies to (20a) yielding (21a), but not to

651 THE UNACCUSATIVE HYPOTHESIS VS. LEXICAL SEMANTICS

(19a), as (21b) attests. Similarly in GB terms, *spaghetti* is the internal argument of the passive participle *mangiata* in the D-structure of (19a) and *gli spaghetti* is the internal argument of the same verb in the D-structure of (20a); in both situations the participle does not assign Case to its object, but the necessary application of Move  $\alpha$  results in a grammatical sentence only with respect to (20a). There is no reason to expect, on a purely syntactic account, that (21b), the passive of (19a) should be ungrammatical, but this is in fact predicted by the lexical semantic account.

Passive is not the only construction which distinguishes between the objects of transitive activity and accomplishment verbs. Burzio (1986:30) claims that "ne-cliticization is possible with respect to *all* and only direct objects"[emphasis added], but in fact it cannot apply to the objects of transitive activity verbs, as (22d) shows.

- (22) a. Hanno mangiat-e tre torte in/\*per cinque minuti.  
 have-3pl eaten-FPL three cakes(FPL) in for five minutes  
 'They ate three cakes in/\*for five minutes.'
- b. Hanno mangiato torte per/\*in cinque minuti.  
 'They ate cakes for/\*in five minutes.'
- c. Ne hanno mangiat-e tre (in/\*per cinque minuti).  
 PART have-3pl eaten-FPL three in/for five minutes  
 'They ate three of them (in/\*for five minutes).'
- d. \*Ne hanno mangiato (per cinque minuti).  
 PART have-3pl eaten for five minutes  
 'They ate some (for five minutes).'

(22d) is the *ne*-version of (22b), which by the 'for/in' time adverbial test has an activity interpretation. The ungrammaticality of (22d) is not predicted by the syntactic analyses. Rosen (1984) discusses another construction with a purported unaccusative pattern, participial absolutes; only intransitive verbs which take *essere* as their auxiliary can enter into this construction, but with transitive verbs it is restricted to non-activity verbs.

- (23) a. Mangiat-i gli spaghetti, uscirono.  
 eaten-MPL the went.out-3pl  
 'Having eaten the spaghetti, they went out.'
- b. \*Mangiat-i spaghetti, uscirono.  
 eaten-MPL  
 'Having eaten spaghetti, they went out.'

The ungrammaticality of (23b), like that of (21b) and (22d), is completely unexpected in terms of the syntactic analyses, but it is readily explicable in lexical semantic terms. Thus, the two accounts make different predictions with respect to the basic question of auxiliary selection, the main verb *essere* being the crucial case distinguishing them, and with regard to related phenomena, e.g. passive, and in each case it is the lexical semantic theory which makes the correct predictions, not the syntactic theories.

ROBERT D. VAN VALIN, JR.

## 4. Georgian case marking

We now turn our attention to Georgian, a language which Harris (1981, 1982) argues provides strong support for the UH. Before examining Harris' arguments, it is necessary to sketch the basic facts pertaining to Georgian case marking. Georgian has four verb classes and three tense series, with case marking variation across both classes and tense series. Holisky (1979, 1981a, b) has shown that the four classes correspond with remarkable accuracy to the four basic Vendler-Dowty classes: class 1 = accomplishment, class 2 = achievements, class 3 = activities, and class 4 = states. The three tense series are present, aorist, and perfect. The twelve categories of class and series are given in Table IV with the case marking pattern found in each.

Tense Series:	Present	Aorist	Perfect
Class 1: Accomplishment	NOM-DAT	ERG-NOM	DAT-NOM
Class 2: Achievement	NOM	NOM	NOM
Class 3: Activity	NOM-(DAT)	ERG-(NOM)	DAT-(NOM)
Class 4: State	DAT-(NOM)	DAT-(NOM)	DAT-(NOM)

Table IV (Harris 1981:2)

The inverse or dative subject forms in class 4 and the perfect series are treated by Harris as being derived by the RG rule of inversion from the other forms. Her primary concern with respect to the UH is with the aorist series: in the present all subjects are nominative; in the aorist, on the other hand, the subject of an intransitive verb of class 2 is nominative, the same case as the object of class 1 and class 3 transitive verbs, and the subject of an intransitive verb of class 3 is ergative. Thus in the aorist series alone is the unaccusative-unergative contrast found. Harris claims that in this series class 2 intransitive verbs have an initial 2 and class 3 intransitives an initial 1.

Harris (1982) presents two types of argument in support of the unaccusative analysis: rules that crucially refer to initial 2s and rules that apply to initial 1s only. The first type of argument can be illustrated with facts regarding suppletion of certain verbs for the number of one of their arguments. Harris shows that the Georgian verb for 'die' suppletes for the number of its subject, while the morphologically related verb for 'kill' suppletes for the number of its object, as in (24).

## THE UNACCUSATIVE HYPOTHESIS VS. LEXICAL SEMANTICS

- (24) a. mgel-i moKvda                      a'. mgel-i movKali  
       wolf-NOM 3SUBJ.die.AOR            wolf-NOM 1SUBJ.3OBJ.kill.AOR  
       'The wolf died.'                    'I killed the wolf.'
- b. mgl-eb-i daixoca                b'. mgl-eb-i davxoce  
       wolf-PL-NOM 3SUBJ.die.AOR        wolf-PL-NOM 1SUBJ.3OBJ.kill.AOR  
       'The wolves died.'                'I killed the wolves.'

This suppletion can be accounted for in terms of a single rule if the subjects of (24a,b) are initial 2s like their counterparts in (24a',b'). Her other arguments regarding preverb alternation and *-en* agreement have the same form.

The second type of argument concerns the application of the RG inversion rule, which takes an initial 1 and make it a final 3 (indirect object). If the aorist and perfect series in Table IV are compared, it appears that the rule applies only to verbs from class 1 and 3. Since Harris claims that class 2 verbs have no initial 1 in the aorist but class 3 verbs do, the failure of inversion to apply to class 2 verbs follows automatically from the unaccusative analysis.

The suppletion facts in (17) and related cases are easily explained in the lexical semantic theory. The LSs for (24a,b) are given in (25).

- (25) a. -k'vd- 'die' = BECOME **dead'** (y)  
       b. -k'lav- 'kill' = [DO (x, [do' (x)])] CAUSE [BECOME **dead'** (y)]

Only a single suppletion rule is needed to account for (24), given the LSs in (25), because in both the intransitive and transitive clauses, *y* (*wolf/wolves*) is in precisely the same relation to the predicate 'die'. Indeed, the LS in (25a) is a component of the LS in (25b).

The distribution of inverse forms can also be accounted for in a straightforward manner. The relevant generalization is stated in (26).

- (26) With respect to classes 1-3, only verbs which have an activity predicate in their logical structure have inverse forms.

Class 3 verbs are activity verbs, and class 1 accomplishment verbs have an activity predicate as part of their LS (cf. e.g. (25b)); class 2 verbs are achievement verbs and have no activity predicate in their LSs. Hence (26) correctly predicts the distribution of inverse forms, just like Harris' unaccusative analysis.<sup>6</sup>

The lexical semantic analysis and the syntactic unaccusative analysis seem to be descriptively equivalent with respect to the phenomena discussed. There are, however, both theoretical and empirical considerations which suggest that the lexical semantic account is preferable. It was noted above that class 2 verbs are unaccusative only in the aorist; in the present, in which subjects are case-marked nominative, the single argument of a class 2 verb must be considered to be an initial 1, since it is case-marked like the initial 1s in classes 1 and 3. Thus in an RG analysis, the class 2 verbs in the present are unergative, while in the

ROBERT D. VAN VALIN, JR.

aorist they are unaccusative. This means that every class 2 verb in the language must be listed twice in the lexicon, once with an initial 1 and once with an initial 2, with each entry marked to indicate which tense series the form occurs in. This is a more significant issue than the small class of A/E verbs in Italian discussed in §3 which would have to be listed twice in the syntactic analysis. No such duplication is required in the lexical semantic theory; class 2 verbs like *gadneba* 'melt' would have the LS BECOME **melted**' (x) regardless of which tense series they occur in. On general theoretical grounds an analysis which does not require postulating double lexical entries for a major class of verbs in a language should be preferred over one which does, assuming they are both descriptively adequate.

There are also empirical differences between the two approaches, and one concerns predictions regarding the Georgian (analytic) passive. An interesting fact about Georgian transitive verbs is that not all of them undergo passivization. 'Transitive' here, following Harris, means that a verb has an initial 1 and an initial 2. Harris (1981:181-2) discusses verbs which take an obligatory initial 2, e.g. *dačera* 'write', *datesva* 'sow', and *gašroba* 'dry', and those which take an optional initial 2, e.g. *tamašī* 'play', *laḡaraRi* 'talk', and *ceRva* 'dance'. Given the RG passive rule, (initial) 2 → 1, it is expected that it should apply to any initial 2 in a transitive structure, and yet *tamašī* 'play', *laḡaraRi* 'talk', and *ceRva* 'dance' have no passive equivalents for their active transitive forms. This failure of passive to apply is not predicted, and an ad hoc stipulation would most likely have to be added to the statement of the rule for Georgian excluding this group of verbs.

The status of this fact is rather different in the lexical semantic theory. All of the transitive verbs which do not passivize are *activity* verbs, members of class 3; the transitive verbs which do passivize are all *accomplishment* verbs, members of class 1. This is exactly parallel to the situation in Italian discussed in §3. That the same restriction is found in both languages argues strongly against any analysis which states the restriction as independent ad hoc stipulations in the two languages. It is important to note that in Georgian the restriction is not based on verb class per se or on verbal morphology: there is a small group of verbs with class 3 morphology which have accomplishment semantics, and these verbs do passivize, just as the lexical semantic analysis predicts (Harris 1981:189-90). Here again we see the lexical semantic theory making a correct empirical prediction which does not follow from the syntactic analysis, and it is particularly striking that the same lexical restriction on passivization is found in two unrelated, typologically very different languages.

##### 5. Case marking in Tšova-Tush and Acehnese

In both Italian and Georgian the split between unaccusative and unergative intransitive verbs has been shown to be related to the inherent lexical aspect of the verbs in question. It is not

## THE UNACCUSATIVE HYPOTHESIS VS. LEXICAL SEMANTICS

the case, however, that all languages which exhibit split intransitive subject marking and related phenomena base the split on the lexical aspect properties of verbs. Tšova-Tush (better known as Bats or Batsbi), a Caucasian language, and Acehnese, an Austronesian language, case-mark intransitive subjects two ways, analogous to Georgian in the aorist, but the semantic basis of the distinction is completely different from Italian and Georgian. The inherent lexical aspect of verbs plays no direct role in the split in these two languages; rather, the distinction is grounded entirely in the agentiveness or volitionality of the intransitive subject.

In Tšova-Tush, according to Holisky (1986), the alternative subject codings are only possible with first or second person subjects only; there is no split in the third person. Examples illustrating the relevant patterns are given in (27) and (28).

- (27) a. bader dah" dapx-dali<sup>n</sup> 'The child got undressed.'  
 child-NOM PVB undress-AOR  
 b. Knat-ev bader dah" dapx-die<sup>n</sup> 'The boy undressed  
 boy-ERG child-NOM PVB undress-AOR-3 the child.'  
 c. (as) dah" japx-jal-n-as 'I (female) got undressed.'  
 lsgERG PVB undress-AOR-lsg-ERG
- (28) a. surat ese qaiç-U 'The picture is hanging here.'  
 picture-NOM here hang-PRES  
 b. badr-ev surat qoç-jie<sup>n</sup> 'The child hung the picture.'  
 child-ERG picture-NOM hang-AOR  
 c. (so) xe-n-mak qaç-u-so 'I'm hanging in a tree.'  
 lsgNOM tree-DAT-on hang-PRES-lsg-NOM

Holisky argues that semantically, nominative and ergative stand in a privative opposition: ergative is unmarked and can signal agentiveness or non-agentiveness, whereas nominative is marked and indicates only the non-agentiveness of the subject. Tšova-Tush intransitive verbs fall into five major classes characterized by Holisky as follows:

- (29) a. Intransitive verbs with nominative marking only  
 b. Intransitive verbs with variable marking:  
 1. Nominative is the norm; ergative is possible but is unusual or rare.  
 2. Both nominative and ergative are possible, with no clear preference for either.  
 3. Ergative is the norm; nominative is possible but unusual or rare.  
 c. Intransitive verbs with only ergative marking.

The most interesting classes are 1 and 3 in (29b); they show clear markedness preferences with respect to the choice of subject case marking. These five classes do not correlate in a direct fashion with the Dowty-Vendler classes, although many of the verbs in group (c) are activity verbs, and the verbs which take ergative marking in all persons are likewise activity verbs. There are, however, activity verbs in the (b) classes as well. It is clear,



ROBERT D. VAN VALIN, JR.

then, that variable intransitive subject marking in Tšova-Tush is primarily a function of the agentiveness of the subject.

The situation in Acehnese is very similar. According to Durie (1985a,b, 1986), Acehnese intransitive verbs can be divided into two classes, depending upon the type of subject they take. This contrast is exemplified in (23), from Durie (1985a, 1986).

- |         |          |          |     |  |                   |
|---------|----------|----------|-----|--|-------------------|
| (30) a. | gopnyan  | geu-mat  | lôn |  | '(S)he holds me.' |
|         | (s)he    | 3-hold   | 1   |  |                   |
| b.      | geu-jak  | gopnyan  |     |  | '(S)he goes.'     |
|         | 3-go     | (s)he    |     |  |                   |
| c.      | lôn      | rhët     |     |  | 'I fall.'         |
|         | 1sg      | fall     |     |  |                   |
| d.      | gopnyan  | rhët     |     |  | '(S)he falls.'    |
|         | (s)he    | fall     |     |  |                   |
| e.      | lôn      | lôn-jak  |     |  | 'I am going.'     |
|         | 1        | 1-go     |     |  |                   |
| f.      | *lôn     | lôn-rhët |     |  |                   |
|         | 1        | 1-fall   |     |  |                   |
| g.      | *gopnyan | geu-rhët |     |  |                   |
|         | (s)he    | 3-fall   |     |  |                   |

Transitive and volitional intransitive subjects are cross-referenced on the verbs by a particular set of proclitics, *geu-* for third person and *lôn-* for first person, as in (30a,b,e). Verbs with non-agentive subjects do not take these clitics, as (30c,d,f,g) show. The criterion determining which coding an intransitive subject will have is agentiveness, not verb class, as Durie's analysis reveals. Intransitive state, achievement and activity verbs appear with both agentive or non-agentive subjects, and many verbs can occur with both (cf. Durie 1985a:62-94).

The verbs in (27a), (28a,c) and (30c,d) would be considered unaccusative because of their non-nominative case marking, while those in (27c) and (30b,e) would be unergative, following the UH. In both languages there are verbs which can be both unaccusative and unergative, and each one would have to be listed twice in the lexicon. In Tšova-Tush, all but a handful of intransitive verbs have nominative subjects in the third person, and of the classes of verbs listed in (29), only a very small class occurs with nominative subjects only in the first and second persons. This means that the overwhelming majority of intransitive verbs would have to be listed twice in the lexicon, on the syntactic analysis. This situation is rather more extreme than that in Italian and Georgian, and it would be fair to say that a generalization is being missed when nearly all intransitive verbs in a language must be listed twice in the lexicon. The lexical semantic approach does not suffer from this complexity. It was pointed out in §2 that in Dowty's final formulation of his classificatory scheme (cf. Table III) one of the fundamental oppositions is agentive/non-agentive, and this is just the contrast which is central to Tšova-Tush and Acehnese. In terms of the LS representations of verbs, agency is indicated by the operator DO, and accordingly the three types of intransitive verbs in the two languages could be

given the representations in (31).

- (31) a. Agentive subject only: DO (x, [**predicate'** (x(,y))])  
 b. Non-agentive subject only: **predicate'** (x(,y))  
 c. Either type of subject: (DO (x,) [**predicate'** (x(,y))])

(Cf. Holisky 1986 for a rather different approach to agency within this general framework.) This necessitates only one lexical entry for each type of verb. It would take a much richer semantic system than the one provided by Dowty to account for the semantic markedness relations among Tšova-Tush verbs of type in (31c), but Dowty's system does furnish an excellent foundation for deeper semantic analyses.

## 6. Conclusion

It has been the thesis of this paper that there is a lexical semantic basis for the phenomena which the Unaccusative Hypothesis seeks to explain and furthermore that the lexical semantic analysis is both descriptively superior to the syntactic unaccusative analyses and more explanatory. This theory of lexical representation for verbs is in no way incompatible with syntactic theories like GB and RG; indeed, the representations proposed could, for example, replace simple lists of  $\theta$ -roles in lexical entries. Rather, the argument has been directed against the analysis of unaccusativity in purely syntactic terms. The lexical semantic theory does, however, provide the basis for a principled theory of the mapping between the semantic representation of verbs and the surface structure of sentences. The details of this mapping are presented in Foley & Van Valin (1984), and this mapping algorithm obviates the need for syntactic underlying forms to express the unergative-unaccusative contrast.

One of the interesting results of this investigation is confirmation of the variable semantic basis of unaccusative phenomena cross-linguistically: in Italian and Georgian the relevant contrast is between classes of verbs with different inherent lexical aspect properties, whereas in Tšova-Tush and Acehnese the contrast turns crucially on agentiveness. This variation argues strongly against any theory of unaccusativity based solely on semantic relations, e.g. 'the subjects of all unaccusative verbs have the same semantic/thematic relation', since for example some of the subjects of unaccusative verbs in Italian are clearly agentive, e.g. those of *correre* 'run' as in *Carlo è corso di proposito a casa* 'Carlo ran home on purpose', while none of the unaccusative subjects in Tšova-Tush and Acehnese are. This variation might also be construed as evidence against a lexical semantic investigation, but in fact it is just the opposite: these two parameters are precisely the ones Dowty uses in setting up his classification. This is summarized in Table V.

Tšova-Tush Acehnese		
	Non-Agentive	Agentive
Inherent Lexical Aspect	States	
	Achiev	
	Accomp	
	Activ	

Italian  
Georgian

Table V

The central chart in Table V represents the Dowty classification in Table III, with the two interacting parameters which define the eight classes specified. This classification in effect predicts the type of variation found in these languages, for it identifies these two parameters as the primary ones around which languages organize their verbal systems. The analysis of Dutch presented in Zaenen (1986) shows that unaccusative phenomena within a single language may be split between these two parameters: impersonal passivization is sensitive to the agentive/non-agentive contrast, while auxiliary selection is based on lexical aspect distinctions. Moreover, the relevant distinction for auxiliary selection is not the same as that for Italian: in Dutch, the fundamental contrast is telic/atelic, which groups together states and activities (atelic), which take *hebben* 'have', in opposition to achievements and accomplishments (telic), which take *zijn* 'be'. The lexical semantic theory provides the means not only for explaining the phenomena in the four languages but also for showing how the particular languages differ from and parallel the others.

This typology makes an interesting prediction. In the unaccusative analysis, all unaccusative verbs in the four languages are treated the same way, i.e. as taking an initial 2 (direct object) in their underlying form. In RG terms, since syntactic rules referring to the initial stratum make reference only to grammatical relations, the unaccusative analysis predicts that all unaccusative verbs should behave the same way with reference to rules affecting initial GRs, i.e., if a rule refers to initial 1s, then unaccusative verbs should never undergo it. The lexical semantic analysis makes a rather different prediction. It predicts that languages which classify intransitive verbs on the same basis should be more like each other than they are like languages which classify them on a different basis. In terms of Table V, this means that with respect to the syntactic properties of intransitive verbs, Georgian and Italian should pattern alike in contrast to Tšova-Tush and Acehnese, and vice versa. A detailed investigation of these predictions is beyond the scope of this paper, but a cursory survey of the facts relating to one rule, imperative formation, in Georgian, Italian, and Acehnese (no data are available on Tšova-Tush) is very suggestive. Unaccusative verbs in Italian and Georgian can freely form imperatives just like unergative verbs, whereas in Acehnese unaccusative verbs cannot be used in imperatives while unergatives can. This is expected in the lexical semantic theory, since agentiveness, a

## 659 THE UNACCUSATIVE HYPOTHESIS VS. LEXICAL SEMANTICS

property of imperative addresses, is the basis for the unaccusative-unergative contrast in Acehnese but not in Italian and Georgian. The unaccusative analysis, at least in its autonomous syntax version, does not predict this contrast. Obviously, much more research needs to be done on a wide range of languages before this issue can be resolved, but here again the lexical semantic theory makes quite distinct empirical predictions from the UH.

Central to all arguments in favor of the UH is the assumption that despite the lack of a consistent, universal semantic characterization of unaccusativity, it is nevertheless a well-defined concept in syntactic terms. However, it has been shown in this paper that purely syntactic criteria fail to pick out a single consistent class of verbs both within individual languages, e.g. Italian, and cross-linguistically, e.g. unergative verbs in Italian and Acehnese, and consequently the status of 'unaccusative verbs' and 'unergative verbs' as unified, well-defined *syntactic* concepts is highly questionable. Indeed, in e.g. Dutch one would have to posit unaccusative class-1 for intransitive verbs which take the perfect auxiliary *zijn* 'be' and a distinct unaccusative class-2 for intransitive verbs which do not allow impersonal passivization. In an autonomous syntax analysis, there is no reason to expect any overlap between these two classes, and yet substantial overlap does exist and can be given a principled characterization in the lexical semantic analysis. Thus the syntactic criteria proposed for verb classification in the UH do not in fact provide an adequate basis for dealing with the phenomena subsumed under the label of 'unaccusativity', whereas the lexical semantic theory constitutes a principled explanatory basis for classifying verbs and accounting for these phenomena.

ROBERT D. VAN VALIN, JR.

## FOOTNOTES

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<sup>2</sup> '(x(,y))' means that predicates of the class in question may have either one argument, i.e. **predicate'** (x), or two, i.e. **predicate'** (x,y).

<sup>3</sup> It has been suggested that if a verb takes both possibilities, only one lexical entry with no specification of class is required, since the verb is grammatical in either D-structure/initial stratum in (1). Such a solution is acceptable only if a theory is striving for mere *observational* adequacy: it correctly states that the verbs in question, e.g. *correre* 'run', can head a grammatical sentence of Italian in either configuration, but it in no way accounts for the semantic and syntactic differences between the two possibilities, something which is essential for analyses aiming at descriptive and explanatory adequacy.

<sup>4</sup> The generalization is paraphrased because the actual generalization put forth in Centineo (1986) presupposes the full theory of semantic and grammatical relations of Role and Reference Grammar, which has not been introduced here. See Foley & Van Valin (1984), chapters 2-4, for a full presentation, Centineo (1986) for a summary of the theory.

<sup>5</sup> This generalization also covers all cases of *si*-reflexive constructions except those with transitive activity verbs. The full generalization in Centineo (1986) deals with these cases as well as *si*-impersonal constructions, a form also not accounted for by (16).

<sup>6</sup> When class 4 verbs are taken into account, the situation is rather more complex; see Samsel (1987) for detailed discussion of Georgian inversion and case marking in terms of the lexical semantic theory as employed in Role and Reference Grammar.

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