0. Introduction

It has been claimed in the literature (Perlmutter 1978, Levin and Rappaport Hovav 1995, among others), based on various criteria and diagnostics, that verbs of manner of motion and verbs of sound emission show both unergative and unaccusative behavior. The behavior of these verbs has been a problem for Perlmutter’s Unaccusative Hypothesis (henceforth UH), which claims that the unergativity/unaccusativity of a verb is based on the meaning of that verb: if one and the same verb can be both unergative and unaccusative the UH loses its predictive power. The solution to this problem has been to claim that verbs of manner of motion and verbs of sound emission are unergative on their basic meaning and unaccusative on their derived meaning of directed motion (see Levin and Rappaport Hovav 1995).

In this paper, I claim that verbs of manner of motion and verbs of sound emission are unergative not only on the basic meaning, but also on the derived meaning. This claim is based on two counterarguments to Levin and Rappaport Hovav’s (1995) analysis of verbs of manner of motion and verbs of sound emission. The first counterargument is based on the fact that Levin and Rappaport Hovav’s claim that verbs of manner of motion become unaccusative on their directed motion meaning leads to contradiction. The second counterargument concerns the class of verbs of sound emission represented by *splash*. *Splash* can only be used as a directed motion verb; as
such, according to Levin and Rappaport Hovav’s claim that directed motion verbs are unaccusative, it should always display unaccusative behavior. However, splash can appear in the X’s way construction, which is considered a diagnostic for unergative verbs. This fact poses a problem for Levin and Rappaport Hovav’s claim that directed motion verbs are unaccusative.

Levin and Rappaport Hovav (1995) claim that manner of motion and sound emission verbs undergo a meaning shift, namely they become verbs of directed motion in the presence of a directional PP. Another purpose of this paper is to answer the question of why only these verbs can become verbs of directed motion, and to clarify the lexical rules that apply to these verbs when they become verbs of directed motion. I suggest that the scope of these rules is constrained by a pragmatic principle which states that the basic meaning and the derived meaning of a verb have to be causally related (see Croft 1991).

1. The Ambiguity of Verbs of Motion

Perlmutter (1978) suggests that verbs denoting volitional acts are unergative and verbs denoting non-volitional acts are unaccusative. Based on this criterion, sentences based on verbs of manner of motion and verbs of sound emission are ambiguous between a volitional and a non-volitional interpretation, which means that they are ambiguous between unergativity and unaccusativity. Levin and Rappaport Hovav (henceforth L&RH) (1995), based on the resultative construction in English, show that verbs of manner of motion and verbs of sound emission display both unergative and unaccusative behavior.

1.1. Perlmutter’s (1978) Classification

Perlmutter (1978) admits that his lists1 of initially unergative and initially
unaccusative predicates are not complete: certain classes of verbs, such as the verbs of motion, are not included. The reason is that, as shown in (1), these verbs appear to be ambiguous between unergativity and unaccusativity and more research is needed to determine the classification of these verbs.

(1)a. The wheels slid on the ice.  (unaccusative)  
b. Joe slid into third base.  (unergative)  
c. Joe slid on the ice.  (unaccusative/ unergative)  
(Perlmutter 1978: 163)

According to Perlmutter, (1a) is unaccusative; (1b) is unergative because it describes a willed action; (1c) is ambiguous between a volitional act, in which case *slide* would be unergative, and a non-volitional one, in which case *slide* would be unaccusative.

Verbs of sound emission are also given as examples of ambiguous verbs.

(2)a. The train roared as it approached.  (unaccusative)  
b. The lion roared as he approached.  (unergative)  
(3)a. The train’s wheels hummed as it approached.  (unaccusative)  
b. Henry hummed as he approached.  (unergative)  
(Perlmutter 1978: 164)

In the examples above, (2b) and (3b) describe willed acts and should be unergative. On the other hand, in (2a) and (3a), *roar* and *hum* should be unaccusative.

Perlmutter (1978) notes the following difference between the interpretation of the (a) sentences and the (b) sentences in (2) and (3). In (2a), “the roar is produced by the approach of the train.” (Perlmutter 1978:164)
On the other hand, in (2b), the roar is not produced by the approach of the lion, but it is an additional act to the one of approaching (not necessarily concomitant).

Perlmutter points out that the distinction between unaccusativity and unergativity does not correspond to the animate/inanimate distinction\(^2\). Although in (2) and (3) the unaccusative sentences happen to have an inanimate subject and the unergative sentences happen to have an animate one, in (1c) the subject is animate and this sentence is still ambiguous. The problem is, therefore, how this type of verbs should be accounted for.

### 1.2. Levin and Rappaport Hovav’s (1995) Meaning Shift Rule

Levin and Rappaport Hovav (1989, 1995), assuming the resultative construction to be a diagnostic for unaccusativity in English (see L&RH 1995, Chapter 2), observe that verbs of manner of motion and verbs of sound emission appear to show both unergative and unaccusative behavior with respect to this test.

To start with manner of motion verbs, these verbs specify an act that is necessarily intentional and require agentive subjects: therefore, semantically, they should be unergative verbs. They appear in the so-called fake reflexive resultative construction, as in (4), which, according to L&RH (1995), is indicative of their unergative status. They also appear in the X’s way construction, as in (5), which is also known to be a diagnostic for unergativity.

(4)a. He danced his feet sore.
   b. Don’t expect to swim/jog yourself sober!

   (L&RH 1995: 187)

(5)a. They jumped their way clear of the vehicle.
The Unergativity of Verbs of Motion

b. They swam their merry way apart.

(L&RH 1995: 200)

However, these verbs appear in the unaccusative resultative pattern as well: in (6), the resultative phrase appears to be predicated of the surface subject.

(6)a. She danced/ swam free of her captors.
b. They slowly swam apart.
c. However, if fire is an immediate danger, you must jump clear of the vehicle.

(L&RH 1995: 186)

As L&RH point out, when manner of motion verbs appear in this pattern, the resultative phrase does not specify a change of state; the resultative XPs in these examples belong to a restricted group of adjectives, such as *free* and *clear*, or to a class of directional elements such as *apart* and *together* (L&RH 1995: 186). That is why, L&RH say, the verbs in (6) are not simply verbs of manner of motion, but verbs of directed motion. Given the hypothesis that verbs of directed motion are unaccusative, the fact that verbs of directed motion like *swim* and *jump* appear in the unaccusative resultative pattern is accounted for. However, as I will show in section 4, the claim that verbs of manner of motion become unaccusative on their directed motion interpretation cannot be correct.

Moving on to verbs of sound emission, according to L&RH (1995), there seem to be three classes:

(i) externally caused verbs (i.e. verbs that can be used transitively, such as *buzz*);
Daniela Lupsa

(ii) internally caused verbs, which split into two classes:
   a. verbs specifying sounds emitted via the vocal tract and which take agentive subjects;
   b. verbs which describe sounds that may or may not be emitted via the vocal tract.

Putting aside externally caused verbs, which do not concern us here (see L&RH 1995, Chapter 3, for the externally/ internally caused distinction), the verbs in class (iia) are, as internally caused verbs, by hypothesis, unergative. The verbs in class (iib) are also, as internally caused verbs, unergative by hypothesis (L&RH 1995: 190); however, they also display unaccusative behavior as they appear in the unaccusative resultative pattern (as shown in (7)), which is a diagnostic of unaccusativity in English; these are the verbs of sound emission that show the puzzling unergative/ unaccusative behavior.

(7)a. ...The refrigerator door clicked open.
    b. ...The curtains creak open and radiant evening light streams into the cluttered room.
    c. The skylight thudded open with a shower of powdery plaster and some lopsided bricks.
    d. The lid of the boiler clunked shut.

    (L&R-H 1995: 191)

    e. We splashed clear of the oncoming boat.

    (L&R-H 1995: 192)

L&RH’s solution to the variable behavior of these verbs is to postulate two different entries for each manner of motion and sound emission verb that shows variable behavior. The unergative entry represents the basic meaning
The Unergativity of Verbs of Motion

of the verb (manner of motion or sound emission); the unaccusative entry, on the other hand, is derived via a lexical rule which adds the meaning of directed motion to the basic meaning of the verb: specifically, these verbs undergo *meaning shift*, i.e. they become verbs of directed motion via a lexical rule, in the presence of a directional PP, as shown in (8) for verbs of manner of motion and in (9) for verbs of sound emission. The addition of a PP in (8) renders this sentence ambiguous: the PP may be interpreted as the location of the motion or as the direction or goal of the motion. Verbs of sound emission also cooccur with directional phrases, as in (9), and on such uses they describe “the directed motion of an entity, where the motion is necessarily characterized by the concomitant emission by that entity of a sound whose nature is lexicalized by the verb” (L&RH 1995: 189). The derived meaning of directed motion determines the unaccusative classification for both verbs of manner of motion and verbs of sound emission.

(8) The mouse is running under the table.
(9)a. The elevator wheezed upward.
    b. At that moment, a flatbed truck bearing a load of steel rumbled through the gate.
    c. The kettle clashed across the metal grid.

(L&R-H 1995: 189-190)

If this is correct, then the puzzling, variable behavior is no longer a mystery: verbs of manner of motion and verbs of sound emission can be both unergative and unaccusative, *but on different meanings*, which makes their behavior compatible with Perlmutter’s (1978) view of the UH.

The class of verbs mentioned in (iia) above are not allowed to undergo the
meaning shift; these verbs, which denote sounds that are emitted via the 
oral tract, cannot cooccur with directional phrases, as shown in (10).

(10) a. *He yelled down the street.
    b. *She shouted down the street.
    c. *The frogs croaked to the pond.

(L&RH 1995: 190)

The lexical rule that L&RH (1995) propose to account for the variable 
behavior of manner of motion verbs and verbs of sound emission poses a 
number of questions. First, as exemplified in (10) above, why do not all 
verbs of sound emission undergo the meaning shift in the presence of a 
directional PP? Second, what prevents other classes of verbs (such as 
communication verbs, as shown in (11)) from undergoing the meaning shift, 
too?

(11) *She talked down the street.

The questions above will receive an answer in section 3.

1.3. Summary

Perlmutter (1978) points out that, according to one of his criteria (namely, 
volitional/ non-volitional), verbs of manner of motion and verbs of sound 
emission are ambiguous between an unergative and an unaccusative 
classification. L&RH (1995) account for the behavior of these verbs by 
proposing a lexical rule which derives directed motion verbs (which are 
unaccusative) from manner of motion or sound emission verbs (which are 
unergative) when a directional PP is present.
The Unergativity of Verbs of Motion

The purpose of this paper is to show that verbs of manner of motion and verbs of sound emission are unergative not only on the basic meaning (manner of motion and sound emission, respectively), but also on the derived one (directed motion). In order to do this, it is necessary to answer the following questions left open by the studies reviewed in section 1:

(i) what motivates the meaning shift rule;
(ii) why does the meaning shift rule apply only to verbs of manner of motion and a certain class of verbs of sound emission?

In section 2, I take a closer look at verbs of sound emission and manner of motion and show which of them undergo the meaning shift and which do not. In section 3, I claim that the lexical rule which derives directed motion verbs from verbs of manner of motion and verbs of sound emission is motivated by a pragmatic principle which states that the basic meaning and the derived meaning of the verb have to be causally related. In section 4, I claim that verbs of manner of motion and verbs of sound emission are unergative not only on the basic meaning, but also on the derived one.

2. Manner of Motion and Sound Emission Verbs: the Obligatoriness of a Directional Phrase

In this section, I take a closer look at the classes of verbs that shift to the directed motion meaning, especially verbs of sound emission. I show that, in contrast with verbs of manner of motion, not all verbs of sound emission undergo a shift in meaning. The verbs of manner of motion and verbs of sound emission that undergo the meaning shift to directed motion do so only when a directional phrase is present and when they take inanimate subjects.
2.1. Sound Emission Verbs

As shown in (10) above and in (12), some verbs of sound emission cannot cooccur with a directional phrase.

(12)a. He yelled.
    b. *He yelled down the street.

Verbs of sound emission which behave like *yell are beep, bellow, blear, chatter, chime, croak, cry, groan, growl, hoot, shout. I refer to this class of verbs as the *yell class.

On the other hand certain verbs of sound emission require a directional phrase, as shown by the contrast between the sentences in (13) and those in (14).³

(13)a. Water splashed onto the floor. (liquid entity as subject)
    b. The rain splashed down all day.
    c. We splashed through puddles. (animate entity as subject)
    d. We splashed across the stream.
(14)a. ??Water splashed.
    b. *The rain splashed.
    c. ??We splashed.

Verbs that behave like splash are clang, clash, clatter, click, clop, clump, clunk, crash, thud. I name these verbs the splash class. Since the interpretation of the sentences in (13) is “to move in the specified direction while making a splashing sound”, splash is a verb of directed motion. According to L&RH (1995), when splash is a verb of directed motion it is unaccusative. (7e) (repeated here as (15)) is given as evidence for the
The Unergativity of Verbs of Motion

unaccusativity of splash on the directed motion meaning. This is because, in this resultative construction, the resultative phrase appears to be predicated directly of the surface subject; if the Direct Object Restriction (see L&RH 1995, Chapter 2) is correct, the surface subject must have been an object at a deeper level of representation, so splash must be unaccusative.

(15) We splashed clear of the oncoming boat.

(L&RH 1995: 192)

Based on the fact that for every possible choice of subject the directional phrase is non-omissible and the only interpretation available is that of directed motion (see (14) above), I claim that the basic sense of splash is that of directed motion, i.e. splash is always a verb of motion. As such, according to L&RH (1995), it should always be unaccusative. However, as it will be shown in section 4, splash displays unergative behavior on its directed motion sense, which invalidates the correlation between directed motion and unaccusativity that L&RH (1995) are trying to establish.

A third subset of sound emission verbs, which I will call the wheeze class, behave like yell when they take subjects which can inherently emit the sound denoted by the verb, and like splash when they take subjects which do not normally emit that sound. This class of verbs includes beat, bubble, chug, clang, gurgle, hiss, rumble, and, of course, wheeze. For instance, beat and wheeze behave like yell (i.e. they do not require a directional phrase) when the subject is heart, drums or when it is animate.

(16)a. His heart stopped beating and he died.
   b. We heard the drums beating.

(17) He was coughing and wheezing all night.
Daniela Lupsa

However, *beat* and *wheeze* do require a locational/directional phrase when the subjects are *rain, hailstones, waves, wind, etc.*, or *elevator*, as shown by the contrast between (18) and (19).

(18)a. Hailstones beat against the window.
    b. The waves were beating on the shore.
    c. The elevator wheezed upward.
    b. *The waves were beating.
    c. *The elevator wheezed.

Other examples of such verbs are *chug* and *rumble*. (20) exemplifies the *yell* pattern, and (21-22) exemplify the *splash* pattern.

(20)a. The engine was chugging.
    b. I’m so hungry that my stomach’s rumbling.
(21)a. The boat chugged along the canal.
    b. Tanks were rumbling through the streets.
(22)a. *The boat chugged.
    b. ?Tanks were rumbling.

The interpretation for the sentences in (21) is ‘to move in the specified direction while making a chugging or rumbling sound.’ No such interpretation is available for the sentences in (20). Therefore, these verbs appear to change their meaning from sound emission to directed motion when they take subjects that cannot inherently emit the specified sound. Consequently, according to L&RH (1995), these verbs should be unaccusative on their directed motion meaning. However, their claim cannot
be correct: even on the directed motion meaning these verbs display unergative behavior by being able to appear in the \( X's \) way construction (see section 4).

Summarizing this section, I have shown that there are three classes of intransitive verbs of sound emission:

(i) the \textit{yell} class includes verbs that denote sounds produced by humans, animals and machines and do not take directional phrases (i.e. they never shift to a directed motion sense);

(ii) the \textit{splash} class includes verbs that do not denote sounds produced by humans, animals, machines; with these verbs, directional phrases are non-omissible since they are always verbs of directed motion; even if their meaning is that of directed motion, these verbs are unergative (see section 4);

(iii) the \textit{wheeze} class includes verbs that behave like \textit{yell} when they take subjects that can inherently produce the sound denoted by the verb (namely, humans, machines, etc.), but like \textit{splash} when they take subjects which cannot inherently produce the sound denoted by the verb; with the latter class of subjects, the directional phrase is non-omissible (which means that only the directed motion interpretation is available in these instances); these verbs are unergative not only the on the sound emission interpretation, but also on the directed motion one (see section 4).

In L\&RH’s terms, the verbs belonging to classes (ii) and (iii) are those which display the meaning shift to verbs of directed motion. When they undergo the meaning shift to directed motion, these verbs should become unaccusative, according to L\&RH (1995). However, their claim cannot be
correct because, as I will claim in section 4, they display unergative behavior even on the directed motion meaning.

2.2. Verbs of Manner of Motion

Verbs of manner of motion, in general, can co-occur with directional phrases. This is shown in (23) and (24) for run and swim.

(23)

(a) John ran.
   b. John ran to the station.
(24)

(a) John swam.
   b. John swam to the shore.

The interpretation for the sentences in (23b) and (24b) is that John went somewhere running or swimming, respectively. However, (23a) and (24a), too, imply that John ran somewhere: the (b) sentences are specific about where John ran or swam. Therefore, these verbs strongly imply directed motion even in the absence of a directional phrase.

Depending on the choice of subject, some verbs of manner of motion require a directional phrase, just like the wheeze class in section 2.1. Compare (25) with (26) and (27).

(25)

(a) We slid.
   b. We slid on the grassy slope.
(26)

(a) *The ship slid.
   b. The ship slid into the water.
(27)

(a) *The automatic door slid.
   b. The automatic door slid open.
The Unergativity of Verbs of Motion

In (25), where the subject is animate, the directional phrase is omissible. In (26) and (27), where the subject is inanimate, the directional phrase is non-omissible, which means that only the directed motion interpretation is available in these cases. Therefore, the descriptive generalization to be drawn here is that when the subject is inanimate and the directional phrase is non-omissible, these verbs have only the directed motion interpretation.

In contrast with the verbs of sound emission (namely, the *yell* class), verbs of manner of motion regularly undergo a shift in meaning when a directional phrase is present. For some verbs of manner of motion (such as *run* or *swim*, see (23) and (24) above), the implication of directed motion is so strong that the directed motion interpretation is available even without a directional phrase. On the other hand, when verbs of manner of motion take inanimate subjects, they require a directional phrase to show that the interpretation is that of directed motion.

According to L&RH (1995), when a directional phrase is present, verbs of manner of motion shift to the directed motion sense and, as a result, become unaccusative verbs. For example, in (23b), *run* is a directed motion verb and, as such, should be unaccusative. However, in section 4, I will argue that their claim that *run* becomes unaccusative on its directed motion meaning cannot be correct.

3. The Nature of the Meaning Shift

In this section, I argue that the meaning shift to directed motion displayed by verbs of manner of motion and verbs of sound emission is motivated by a pragmatic principle which states that the basic meaning and the derived meaning of a verb have to be causally related. Then, I formulate the lexical rules which derive verbs of directed motion from verbs of manner of motion and verbs of sound emission.
3.1. The Pragmatics Motivating the Meaning Shift

Following Croft (1991: 160), I propose that the meaning shift characteristic of verbs of manner of motion and verbs of sound emission is motivated by the principle in (28).

(28) Derive Meaning₂ from Meaning₁ if one of the subevents in Meaning₂ is the conceptualized cause or effect of the event in Meaning₁.

Meaning 1: sound emission

Meaning 2: sound emission + directed motion

(motion is the cause of the emission of the sound)

In discussing what a single verb in a natural language may denote, Croft (1991: 160) suggests that “individual lexical items appear to denote only causally linked events.” In (29), where the verb adds to its basic meaning (i.e. manner of motion) that of directed motion, “the activity of sailing and the motion into the cave can be combined only because the activity of sailing causes the motion to come about.” (Croft 1991: 160)

(29) The boat sailed into the cave.

Manner of motion verbs such as run (or sail) describe motion that, typically, involves displacement (Levin 1993). If we say John ran, we typically infer that John moved. John may run in place, but unless we specify that he runs in place, most speakers will interpret John ran as John went somewhere running. Swim is another verb that strongly implies movement from one location to another. In fact, if one moves one’s legs and arms in water but still remains in the same place, a different verb is used: tread water. Therefore, it is natural to assume that verbs of manner of motion
become verbs of directed motion because the activities they denote cause the motion.

Goldberg (1995: 62) adopts Croft’s proposal as “the causal relation hypothesis” and restates it in terms of meanings designated by verbs, on the one hand, and by constructions, on the other. She cites, as evidence for Croft’s claim, verbs of sound emission whose meaning shifts to directed motion: such verbs can be used as verbs of motion “when the sound is a result of the motion and occurs simultaneously with the motion” (Goldberg: 1995: 62). For example, in (13), repeated here as (30), if the water were not thrown onto the floor, it would not splash; similarly, if the rain were not coming down, it would not splash, either. If the animate subjects in (c) and (d) were not moving, the sound lexicalized by splash would not be produced. Therefore, we could say that movement is an indispensable part of the lexical item splash. Accordingly, if the directional phrase expressing the direction of motion is omitted, as in (31), those sentences should be ungrammatical because, as argued in section 2.1, splash can only be used to denote motion.

(30)a. Water splashed onto the floor.
    b. The rain splashed down all day.
    c. We splashed through puddles.
    d. We splashed across the stream.

(31)a. ??Water splashed.
    b. *The rain splashed.
    c. ??We splashed.

Similarly, wheeze denotes directed motion when the subject is not a sound emitter (as in (9), repeated here as (32a)), because an elevator makes a wheezing sound only when it moves.
(32)a. The elevator wheezed upward.
   b. *The elevator wheezed.

The hypothesis that verbs of sound emission become verbs of directed motion when the motion causes the emission of the sound accounts for the fact pointed out by Perlmutter that the verbs in (33a) and (34a) differ in interpretation from the same verbs in (33b) and (34b).

(33)a. The train roared as it approached. (unaccusative)
   b. The lion roared as he approached. (unergative)
(34)a. The train’s wheels hummed as it approached. (unaccusative)
   b. Henry hummed as he approached. (unergative)

(Perlmutter 1978: 164)

In these examples, the (a) sentences are unaccusative because they express non-volitional acts; in contrast, the (b) sentences are unergative because they express volitional acts. It is pointed out that in the (a) sentences the sound is produced by the approach, while in the (b) sentences there is no relation between the emission of the sound and the act of approaching. In Perlmutter’s words, the approaching is an additional act to the roaring or the humming. This interpretation is consistent with what I have stated so far. In the (b) sentences, roar and hum take animate subjects that can emit such sounds via the vocal tract so these verbs display Meaning₁, that of sound emission. In the (a) sentences, on the other hand, roar and hum take inanimate subjects that cannot produce sounds via a vocal tract; it is the approach, i.e. the movement, that causes the sound, so what we have in these sentences is Meaning₂ of roar and hum, i.e. the motion verbs roar and hum. That is why, as Perlmutter observes, in the (b) sentences we have two
volitional acts on the part of the same entity, while in the (a) sentences we have one act, with the approaching causing the roaring.

### 3.2. The Impossibility of Meaning Shift for Certain Verbs

The principle in (28) correctly predicts that (10) and (11), repeated here as (35) and (36), are ungrammatical.

(35)

(a) *He yelled down the street.
   b. *She shouted down the street.
   c. *The frogs croaked to the pond.

(36) * She talked down the street.

The sentences in (35) and (36) are impossible because the motion implied by the directional phrases is neither the cause nor the effect of the acts denoted by the verbs in these sentences. The *yell* class of verbs or verbs of communication such as *talk* will not shift to the directed motion meaning because the principle in (28) will exclude them from the verbs to which the lexical rule that derives verbs of directed motion from other verbs can apply.

### 3.3. Deriving Directed Motion Verbs

I assume that verbs of manner of motion have the lexical semantic representation in (37), in which the primitive predicate MOVE denotes motion and the constant *MANNER* modifying the predicate represents the idiosyncratic information associated with verbs of manner of motion.

(37) $x \text{MOVE}_{MANNER}$

After the rule in (38) applies, verbs of manner of motion become verbs of
directed motion by the addition of the constant \textit{DIRECTION}.\textsuperscript{4}

\[ (38) \ x \ MOVE\textit{MANNER} \rightarrow [\ x \ MOVE\textit{MANNER} \ DIRECTION] \]

For verbs of sound emission, I assume the lexical semantic representation in (39), in which the primitive predicate \textit{EMIT} (present in the lexical semantic representation of verbs of emission) is modified by the constant \textit{SOUND}.

\[ (39) \ x \ \textit{EMIT}_{\textit{SOUND}} \]

To the representation in (39), the rule in (40) applies and verbs of sound emission become verbs of motion by the addition of the primitive predicate \textit{MOVE}, which takes the argument-constant \textit{DIRECTION}. The “and” function shows that the subevents denoted by the primitive predicates occur simultaneously.

\[ (40) [ x \ \textit{EMIT}_{\textit{SOUND}}] \rightarrow [x \ \textit{EMIT}_{\textit{SOUND}}] \ & \ [x \ \textit{MOVE} \ \textit{DIRECTION}] \]

As a result of the application of (40), verbs of sound emission become verbs of motion; these verbs get their name from the constant modifying the primitive predicate \textit{EMIT} and, thus, the information associated with the sound emission meaning component is recoverable through the name. On the other hand, because these verbs have added a new meaning component to their basic meaning, they have to co-occur with a directional phrase that makes the information associated with the newly added meaning component \textit{MOVE} recoverable.
Let us exemplify the rules above, starting with verbs of manner of motion. The verb of manner of motion *run* has the lexical semantic representation in (41).

\[(41) \ x \text{MOVE}_{\text{RUN}} \]

*Run* becomes a directed motion verb as a result of the application of the rule in (42), so in a sentence such as (43), *run* has the lexical semantic representation \([x \text{MOVE}_{\text{RUN}} \text{ DIRECTION}]\).

\[(42) \ x \text{MOVE}_{\text{RUN}} \rightarrow [x \text{MOVE}_{\text{RUN}} \text{ TO THE STATION}] \]

(43) John ran to the station.

The verb of sound emission *wheeze* has the lexical semantic representation in (44).

\[(44) \ x \text{EMIT}_{\text{SOUND}} \]

*Wheeze* becomes a verb of directed motion after the rule in (45) applies yielding (46).

\[(45) \ x \text{EMIT}_{\text{WHEEZE}} \rightarrow [x \text{EMIT}_{\text{WHEEZE}}] \& [x \text{MOVE} \text{ UPWARD}] \]

(46) The elevator wheezed upward.

For the *splash* class of verbs of sound emission, I assume the lexical semantic representation in (47).

\[(47) [x \text{EMIT}_{\text{SOUND}}] \& [x \text{MOVE} \text{ DIRECTION}] \]
The lexical semantic representation in (47) accounts for the fact that *splash* is always used as a verb of directed motion (see 2.1. above). The *wheeze* class of verbs of sound emission undergo a meaning shift to become verbs of directed motion that lexicalize the sound caused by the motion, i.e. *splash*. After the meaning shift, the lexical semantic representation of the derived verbs of motion should be the one in (47). This is because the lexical semantic representation of the derived verbs should match the lexical semantic representation of the verbs that are originally verbs of motion, i.e. *splash*. That is why, after the rule in (45) applies, the *wheeze* verbs that have undergone a meaning shift will have the representation in (47) and no other.\(^5\)

**4. The Unergativity of Verbs of Motion**

In this section, I claim that verbs of manner of motion and verbs of sound emission are unergative both on the basic meaning (manner of motion and sound emission, respectively) and on the derived meaning of directed motion. This claim is supported by two pieces of evidence. The first is based on the *X’s way* constructions in (48).

(48)a. We splashed our way across the stream.

b. The elevator wheezed its way to the 30\(^{th}\) floor.

The *X’s way* construction is generally acknowledged to be a diagnostic for unergative verbs. If this is correct, then *splash* and *wheeze* in (48) should be unergative. In 2.1. and 3.3., I have argued that *splash* is originally a verb of directed motion. In 2.1. and 3.1., I have also argued that, when the verbs in the *wheeze* class take inanimate subjects, the only available interpretation is that of directed motion. If this is correct, *splash* and *wheeze* in (48) are directed motion verbs. As such, according to L&RH (1995), *splash* and
The Unergativity of Verbs of Motion

*wheeze* should be unaccusative. If their analysis is correct, the sentences in (48) would be incorrectly predicted to be ungrammatical. However, the sentences in (48) are acceptable. If the *X’s way* construction is a reliable test for unergativity, *splash* and *wheeze* should be unergative on their directed motion meaning.

For the second piece of evidence, a few preliminary remarks are necessary. L&RH (1989, 1995) claim that resultative phrases are incompatible with *arrive* verbs, as shown in (49), due to Tenny’s (1987, 1992) Single Delimiting Constraint.

(49) *She arrived/ came/ descended tired.

(Levin and Rappaport 1989: 324)

Tenny (1987) proposes that a clause may have only one delimiting phrase. In (50), the delimiting phrase is *to the store*.

(50) She ran to the store.

Levin and Rappaport (1989) claim that the meaning of the verbs in the *arrive* class includes an inherently specified change of location (e.g., *arrive*) or an inherently specified path (e.g., *descend*). Consequently, as these verbs lexically select a delimiting phrase describing a change of location, they are incompatible with a second delimiting phrase describing a change of state. This is the reason why (49) is ungrammatical. As one of the pieces of evidence supporting this analysis, Levin and Rappaport cite (51).

(51) *She ran herself to the store ragged.*
The sentence in (51) is ungrammatical because verbs of manner of motion are incompatible with resultative phrases, when they cooccur with a goal phrase, presumably because two types of delimiters cannot cooccur. Thus, (51) is ruled out for the same reason as (49).

However, if the resultative phrase and the goal phrase are switched as in (52), the sentence becomes acceptable (Masaru Nakamura, personal communication).

(52) She ran herself ragged to the store.

According to L&RH, run in run to the store is an unaccusative verb. However, run can appear in the fake resultative construction as in (52), thereby behaving like an unergative verb. Therefore, L&RH’s claim that run in run to the store is unaccusative leads to contradiction, since in (52) run should be both unergative and unaccusative, which also means that (52) would be incorrectly predicted to be ungrammatical. On the other hand, if we assume that run in run to the store is unergative, there is no such contradiction and (52) is correctly predicted to be grammatical.

Based on (48) and (52), I conclude that verbs of manner of motion and verbs of sound emission are unergative not only on their basic meanings (manner of motion and sound emission), but also on the derived meaning of directed motion.\(^6\)

5. Concluding Remarks

Verbs of manner of motion and verbs of sound emission have been claimed to display variable behavior with respect to unaccusativity diagnostics. In order to account for the variable behavior of these verbs, L&RH (1995) propose a meaning shift rule which applies to these classes of
verbs and adds the meaning of directed motion to their basic meaning when a
directional phrase is present. It is on this derived meaning of directed motion
that these verbs display unaccusative behavior.

In this paper, I have claimed that verbs of manner of motion and verbs of
sound emission are unergative not only on their basic meaning, but also on
the derived one. If this claim is correct, it casts doubt on the reliability of the
resultative construction, used by L&RH (1995) to test the unaccusativity of
verbs of manner of motion and verbs of sound emission on the directed
motion meaning. For instance, if splash is an unergative verb, (7e) (repeated
here as (53)) cannot be an unaccusative structure.

(53) We splashed clear of the oncoming boat.

The claim that (53) is not an unaccusative structure raises new problems
and possibilities with respect to resultative constructions in English (if (53)
is taken to be a resultative construction at all). For instance, Levin and
Rappaport Hovav (2001), based on counterexamples to the Direct Object
Restriction as a generalization on the distribution and interpretation of
resultative phrases in English, abandon the Direct Object Restriction and
argue that an event structure-based account of resultative constructions in
English is the correct one.

* This is a revised and extended version of the paper presented at the 8th
meeting of the Morphology and Lexicon Forum held at the University of
Tokyo on March 23-24. I would like to thank Jeffrey A. Pennington for his
native speaker judgments and useful comments on the English sentences in
this paper. I am very grateful to Professor Masaru Nakamura for having the
patience and tenacity to read and comment on the earlier versions of this paper and for his invaluable contributions to the ideas presented here. I thank Professor Yoshiaki Kaneko for his stimulating comments and suggestions which helped me better understand and express what I was trying to say here. My thanks also go to Nobuhiro Miyoshi, Mika Takahashi, Izumi Shimamura and especially Yosuke Sato, for commenting on the ideas presented here and for their warm encouragement and support. All errors and inadequacies remain my own.

Notes

1) There are two (or three) puzzling things about Perlmutter’s list of predicates determining initially unergative and initially unaccusative clauses. For one thing, as pointed out in Cummins (2000), it is not clear if he considers initial unergativity/unaccusativity to be a property of the predicates or a property of the clauses they can be found in (or a property of both, as well). Second, he says that verbs of motion have not made it on the lists because they can be ambiguous and thus require further study. As an example of such an ambiguous verb he gives slide. Here, it is not clear what he means by verbs of motion: verbs of manner of motion, verbs of coming and going, both classes or, possibly, other kinds of verbs too. Some verbs of manner of motion (at least categorized so by Levin 1993:266), such as crawl, walk and (voluntary) skip are on the list of predicates determining initially unergative clauses. Other verbs of manner of motion, such as float, roll, slide, and glide are on the list of predicates determining initially unaccusative clauses (see Levin 1993: 264-266 for a classification which puts the first three in the roll class and the last one in the run class). Of Levin’s verbs of inherently directed motion (Levin 1993: 263), fall is on the list of predicates determining initially unaccusative clauses, but it is also given as a predicate that can appear in both unergative and unaccusative clauses.
The Unergativity of Verbs of Motion

(Perlmutter 1978:164). The typical verbs of coming and going (Levin’s verbs of inherently directed motion) *arrive, come, go* do not appear on the lists. Could it be that these verbs are also considered ambiguous verbs of motion?

2) Although see Rappaport Hovav and Levin (2000) for the view that the animacy of the argument determines whether a verb (i.e. *roll*) is unaccusative or unergative.

3) However, in (i) the locational/ directional phrase appears to be optional.

(i) A fish splashed.

But a fish cannot splash unless it jumps up and falls back into the water, so, in a sentence such as (i), a phrase like “in the pond” is merely deleted because it is recoverable.

4) I assume, following Rappaport Hovav and Levin (1998), that constants can be either arguments or modifiers of primitive predicates. Argument constants appear in argument positions in lexical semantic representations. Modifier constants appear as subscripts.

5) Besides the principle in (28), I assume that the derivation of “new” verb meanings is also subject to a principle which determines the range of derived meanings: Rappaport Hovav and Levin’s (1998) Template Augmentation or Nakamura’s (2001) Semantic Structure-Preserving Constraint. In Rappaport Hovav and Levin (1998), derived verb meanings must fit the possible lexical semantic templates provided by Universal Grammar. In Nakamura (2001), derived semantic structures must fit one of the semantic structures which already exist in the lexicon.

6) At the moment, I have no explanation for the fact that (i) is not possible, but see Matsuoka (1999) for evidence based on binding relations that the single (inanimate) argument of intransitive *roll* is generated in subject position, which means that *roll* has to be unergative.

(i) *Jack rolled himself dirty to the bottom of the hill.


   Jack rolled to the bottom of the hill.
The hypothesis that *roll* verbs are unergative would also account for the fact that the *rolled ball* can have only a passive interpretation (see Levin and Rappaport 1989).

**References**


*Oxford Advanced Learner’s Dictionary*
The Unergativity of Verbs of Motion


Department of English Linguistics
Faculty of Arts and Letters
Tohoku University

E-mail: dlupsa@sal.tohoku.ac.jp