

# ARGUMENT STRUCTURE AND ANIMACY ENTAILMENT

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## 1. Introduction<sup>1</sup>

This paper delineates and accounts for restrictions on the distribution of arguments whose thematic roles select them for animacy. An example of such an argument is the subject of (1) which, following standard accounts, must be animate on account of the selectional properties of the AGENT role assigned by “steal.”

- (1) Mary stole the money.

The effect of these selectional properties is attested by the unacceptability of the inanimate substitution in (2).

- (2) \*The wind stole the money.

I argue that this requirement of animacy, which I shall refer to as “animacy entailment”, represents part of the AGENT thematic relation. Moreover, I assume that animacy entailment is a theoretically genuine part of any thematic relation that selects an animate argument. As I will show, this makes it possible to discern abstract syntactic principles constraining the generation of all such thematic relations.

Another important property of the AGENT thematic role assigned to the subject position of (1), or rather of its animacy entailment, is reflected by the fact that there are sentences like (3), whose syntactic structures are identical to (1), but in which the thematic role of AGENT —or, more precisely, the animacy entailment— is optional.

- (3) Mary hit John.

Here, the role of AGENT, or rather its animacy entailment, can be dispensed with entirely. For example, (3) could perfectly well describe a situation in Mary is asleep

(1) I am grateful for all of the ways in which this article has benefited from the comments of Noam Chomsky, Ken Hale, Marco Haerikort, Carol Neidle, Orin Percus, and an anonymous reviewer. All errors are, as always, my own.

and falls out of bed, happening to collide with John on the floor. The optionality of agency (animacy entailment) here perhaps is made even clearer by the inanimate substitutions in (4) - (5).

- (4) A rock hit John. (5) A hail stone hit John.

What each of (3) - (5) demonstrate is that the AGENT role, or more specifically the animacy entailment, associated with the subject of "steal" occupies a theta position in which it can optionally be generated by means independent of any lexical properties of "steal" itself.

This work is concerned just with any animacy entailment that is like that involved in the AGENT role insofar as it is both: (a) selected in some theta position by at least one verb in the language (as it is in the subject of "steal" in (1)); and (b) optionally generable in that same theta position in syntactically parallel sentences in which it happens not to be selected (as it is in the subject of "hit" in (3)).

Section 2 argues that this kind of animacy entailment is produced by the application to syntax of a certain optional lexical interpretation made available in accord with abstract syntactic principles.<sup>2</sup> I refer to such animacy entailment as "lexico-interpretational"<sup>3</sup> —regardless of whether it ends up being optional as in (3), or obligatory as in (1).

This leads me to argue that the AGENT role, as well as the "SENSOR" (an emotional PATIENT)<sup>4</sup>, "VOLUNTEER" (roughly, an interested THEME)<sup>5</sup> and BENEFICIARY (roughly, an interested GOAL)<sup>6</sup> roles, discussed below, are the product of two underlying factors.

(2) See Minkoff (1994) for a related proposal.

(3) I adopt this terminology to reflect the fact that the interpretation responsible for producing this animacy entailment is linked to the lexicon in a way that distinguishes it from a certain other kind of interpretation, which also happens to produce animacy entailment. On the one hand, as discussed in the text, lexico-interpretational animacy entailment can in principle be selected by particular lexical items. On the other hand, another form of animacy entailment is interpretational, but never can be selected by any lexical item. This form of animacy entailment can be generated in the subjects of unaccusatives, as in the subject of "arrive" in (i.a); in the derived subjects of passives, as in the subject of "was examined" in (ii.a); or in the derived subjects of raising verbs, as in the subject of "seeming" in (iii.a).

- (i.a) In order to make a point, Mary arrived hungry.
- (i.b) \*In order to make a point, the package arrived dirty.
- (i.c) The package arrived dirty.
- (ii.a) Mary was examined by the doctor (in order to please her worried friends).
- (ii.b) \*The specimen was examined by the doctor (in order to please Mary's worried friends).
- (ii.c) The specimen was examined by the doctor.
- (iii.a) To frighten away predators, the blowfish are seeming to be really big.
- (iii.b) \*To frighten away thieves, the packages are seeming to be really big.
- (iii.c) The packages seem to be really big.

This animacy entailment is shown to be interpretational by the acceptability of the "c" examples. However, it is not lexico-interpretational, since it can never be selected by any lexical item of the relevant category. In other words, no unaccusative verb ever selects lexico-interpretational animacy entailment in its subject (cf. Subsections 2.2 and 2.6); no passive ever selects lexico-interpretational animacy entailment in its surface subject; and no raising verb ever selects lexico-interpretational animacy entailment in its surface subject.

- (4) The nature of this role is considered in subsection 2.1.
- (5) The nature of this role is considered in subsection 2.5.
- (6) The nature of this role is considered in subsection 2.5.

One of these factors is purely a reflex of syntactic configuration in the sense of Hale and Keyser (H&K) (see Hale & Keyser this volume): I assume that syntax alone generates the so-called “thematic roles” that H&K discuss.<sup>7</sup> The other factor is the phenomenon of lexico-interpretational animacy entailment (LIAE), introduced above, which is produced by an optional interpretation that applies to syntax, and adds the factor of animacy entailment, in this manner augmenting the basic, syntactically generated, role.<sup>8</sup>

(7) The only exception to this may be the role of AGENT. For example, in Hale and Keyser (1991a), AGENT is a configurationally determined notion. So, for example, the sense of an AGENT role in the subject of (i) would derive from properties of syntactic configuration.

- (i) Mary shelved the book.

I claim that, in an example like (1), syntactic configuration is responsible for creating the sense that the subject is a CAUSER. As detailed in the text, the sense that this CAUSER is specifically an AGENT follows, not from syntactic configuration but, rather, from the application of an optional interpretation that generates lexico-interpretational animacy entailment.

(8) As is detailed below, LIAE is responsible for converting the CAUSER into an AGENT, the THEME into a "VOLUNTEER" (roughly, and interested THEME), the PATIENT into a SENSOR (an emotional PATIENT), and the GOAL into a BENEFICIARY (roughly, an interested GOAL). Two points are worth noting in this regard.

First, the animacy whose entailment is at issue is of a certain special kind. For example, the subjects of (i) and (ii) are animate, yet clearly that of (ii) conflicts with the LIAE associated with the AGENT role.



Thus, at a minimum, LIAE appears to be consistent with nouns that are human, but not with those that are botanical. (Note that (ii) remains unacceptable even if one assumes that the bamboo, by its fast rate of growth, has caused the money in question to be pushed away from the speaker. This demonstrates that the problem with (ii) cannot be that the subject lacks the ability to carry out the physical aspects of the action.)

Second, the generation of LIAE has syntactic consequences. For example, the (subject-to-subject) control relation in (ii) - (v) is licensed only when LIAE converts the CAUSER into an AGENT.

- (iii) Mary<sub>i</sub> moved the papers<sub>j</sub> onto the floor (\*PRO<sub>i</sub> to stand on t<sub>j</sub>)  
AGENT
  - (iv) Mary<sub>i</sub> accidentally moved the papers<sub>j</sub> onto the floor (\*PRO<sub>i</sub> to stand on t<sub>j</sub>)  
CAUSER
  - (v) The fan<sub>i</sub> moved the papers<sub>j</sub> onto the floor (\*PRO<sub>i</sub> to stand on t<sub>j</sub>)  
CAUSER

The control relation in (vi) - (viii) is licensed only when LIAE converts the THEME into a "VOLUNTEER" (roughly, an interested THEME).

- (vi) (PRO<sub>i</sub> to get washed), I sent John<sub>i</sub> to the lake.  
VOLUNTEER



(On an interpretation on which the speaker knows that John's interests will be served neither by his going to the lake, nor by his dying.)

- (viii) (\*PRO<sub>i</sub> to get washed), I sent my car<sub>i</sub> to the lake.  
THEME

The binding relation in (ix) - (xi) is licensed only when LIAE converts the PATIENT into a SENSOR.

- (ix) That picture (of herself/itself) really struck Mary/the monster.  
SENSOR

- (x) That picture (\*of herself/itself) really struck Mary/the monster.  
PATIENT

(On an interpretation on which the picture falls off of a wall and hits Mary/the monster.)

- (xi) That picture (\*of itself) really struck the rock.  
PATIENT

And the binding relation in (xii) - (xiv) is licensed only when LIAE converts the GOAL into a BENEFICIARY. (See Minkoff 1994 for discussion of examples like (iii) - (viii) and (xii) - (xiv).)

I show how the optional interpretation that produces LIAE is constrained by abstract syntactic principles, so that the distribution of LIAE is not arbitrary, but rather is restricted in principled ways. And I show how these constraints correctly predict, in turn, a parallel set of non-arbitrary restrictions on any verb that selects LIAE, effectively limiting the kinds of selection restrictions, and the combinations thereof, that can be generated by the lexicon.

Taking (1) and (3) as cases in point, syntactic configuration generates the sense of a CAUSER role in the subject position. The application of an optional interpretation to this configuration generates LIAE, producing the additional sense that the CAUSER in question is an AGENT.

Further, the reason that LIAE (and hence the sense of an AGENT role) happens to be obligatory in sentences like (1) in particular is because verbs like "steal" happen, as a matter of lexical idiosyncrasy, to select the optional interpretation by which the LIAE in the subject (and hence the sense of an AGENT) is produced. Moreover, since the theory permits verbs to select optional interpretations, it correctly predicts that the language should have the potential to create verbs like "steal" —i.e. transitive verbs that select LIAE (hence the AGENT role) in their subjects. The theory also predicts, correctly I will argue, that the language should be incapable of creating certain other imaginable verbs —for example, a transitive verb with a meaning like "to deliberately amaze", which would select both LIAE (hence the AGENT role) in its subject, and LIAE (hence the SENSOR role) in its object.

It must be noted here that there exist instances of animacy entailment that are not interpretational, such as those in the subjects of (6a) - (6e).

- |      |                     |      |                    |
|------|---------------------|------|--------------------|
| (6a) | Mary got mad.       | (6d) | Mary became happy. |
| (6b) | Mary became sad.    | (6e) | Mary was glad.     |
| (6c) | Mary turned scared. |      |                    |

Of course, the animacy entailment in these subjects is obligatory, as is attested by the unacceptability of the (in my culture) inanimate substitutions in (7a) - (7e).

- |      |                           |      |                              |
|------|---------------------------|------|------------------------------|
| (7a) | *The volcano got mad.     | (7d) | *The lightning became happy. |
| (7b) | *The rock became sad.     | (7e) | *The water was glad.         |
| (7c) | *The screw turned scared. |      |                              |

(xii) Mary sent a picture (of himself/itself) to John/the monster.  
BENEFICIARY

(xiii) Mary sent a clone (\*of himself/itself) to John/the monster.  
GOAL

(On an interpretation on which the clone volitionally goes to John/the monster, acting, in other words, as a VOLUNTEER —not one on which the clone goes, non-volitionally, into John's/the monster's possession.)

(xiv) Mary sent a picture (\*of itself) to Guatemala City.  
GOAL

Examples like these demonstrate that LIAE is crucial to accounting for the licensing of certain dependencies, and therefore that its theoretical status should be considered genuine.

Up to now, (6a-e) may appear similar to (1), above. However, the animacy entailment in (6), unlike that in (1), can never be optionally generated by independent means. To see this point, let us suppose that animacy entailment makes the subjects of (6a-e) into instances of the EXPERIENCER role, since the adjective in each case denotes the subject's psychological state. Now, as far I can tell, there are no sentences syntactically parallel to (6a-e) in which such an EXPERIENCER role is optionally available. There do exist sentences like (8) - (10), which are syntactically parallel<sup>9</sup> to (6a-e) but lack an EXPERIENCER subject.

- (8) Mary turned red.      (9) Mary became tall.      (10) Mary got old.

But in no such sentence is the EXPERIENCER role optionally available. (Note that (8) - (10) would be candidates for such, since they happen to have human NPs in subject position.)

I will claim that, in the subjects of (6a-e) and (8) - (10), the reason there is no optional EXPERIENCER role is because animacy entailment cannot be generated in these positions by applying an interpretation to these sentences' syntactic structures.

In conclusion, then, in some sentences, such as (1), the animacy entailment selected on an argument is lexico-interpretational; in other sentences, such as (6a-e), the animacy entailment selected on an argument is not interpretational ("lexico-" or otherwise).

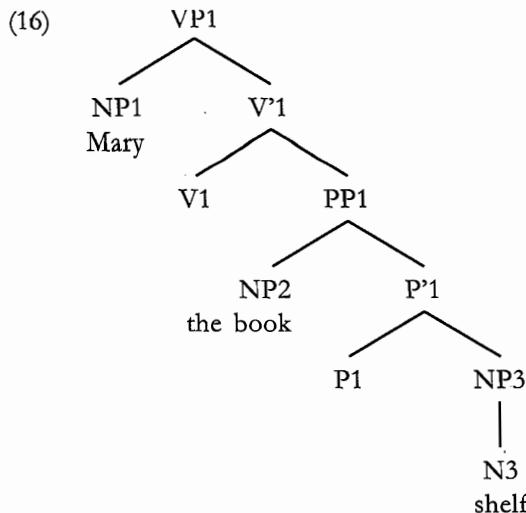
In Section 3, I use the theory developed in Section 2 to explain facts about the behavior of unergative, location, locatum, "possession", and inchoative verbs, such as those in (11), (12), (13), (14) and (15), respectively.

- |  |                                   |
|--|-----------------------------------|
| (11) Mary walked.                            | (12) Mary shelled the book.       |
| (13) Mary saddled the horse.                 |                                   |
| (14) We provisioned those mountain climbers. |                                   |
| (15a) The gravy thinned.                     | (15b) The cook thinned the gravy. |

I assume following H&K that each of these verbs is derived via incorporation of a lexical item from an underlying "lexical relational structure" (LRS) in which the unincorporated item forms the lowest complement in a corresponding clause containing empty heads.

For example, H&K (1993) derive (12) from the LRS (16).

(9) I believe that the verbs in (6a-e), (8), (9) and (10), should be considered unaccusatives, but nothing turns on the use of this label. All that is relevant for our purposes is that, at all levels of representation, these verbs have only one argument. (Cf. unergative verbs, discussed in Subsection 3.1.1, which are assumed to have two arguments in their base generated structures.)



Section 3 shows that LIAE is distributed on the arguments of derived verbs in accord with the same principles that constrain its distribution on the arguments of the ordinary (i.e. non-derived) verbs discussed in Section 2: All instances of LIAE are generated, and constrained, on base generated syntax, whether on the LRSs of derived verbs or on the d-structures of non-derived verbs.

The findings of Section 2 entail that the morphology of derived verbs must “remember” LIAE (or the ungenerability thereof), possibly even after the LRS on which the LIAE is generated, and even selected, no longer exists. Hence, at the level of lexical semantics, the relationship between syntax and morphology appears to be richer than has previously been argued.

Finally, this work suggests that there is a certain binary order to much of the thematic-relational realm, because it holds that, for each of a variety of thematic relations established by syntactic structure, there exists an animacy-entailing subcase created by the generation of LIAE: For the CAUSER role there exists the LIAE-induced subcase AGENT; for the PATIENT role, the LIAE-induced subcase SENSOR; for the THEME role, the LIAE-induced subcase VOLUNTEER; and for the GOAL role, the LIAE-induced subcase BENEFICIARY.<sup>10</sup> To the extent that such a “bifurcation” of semantic roles is on the right track, it supports the thrust of this work.

(10) As pointed out in note 8, the animacy at issue in LIAE, i.e. at issue in the creation of the AGENT, SENSOR, VOLUNTEER and BENEFICIARY roles, is of a special kind. To elaborate on this point here, what LIAE seems to involve is that the arguments in question must have certain attributes in order to successfully fulfill their thematic roles. Depending upon whether the thematic role is that of AGENT, SENSOR, VOLUNTEER or BENEFICIARY, the necessary attributes seem to be, roughly, those of intention, sentience, or capacity for ownership. Since these attributes are available only to animate arguments, the resulting roles clearly must be animacy-entailing. However, it also is clear that, given the nature of these attributes, not just any animate argument will suffice.

For example, the subject of (i) must act with intention in order to successfully fulfill the LIAE-induced role of AGENT. Hence, it is, of course, obvious that this argument has to be animate.

(i) Mary stole my money.  
AGENT

## 2. Lexico-Interpretational Animacy Entailment Relations in Argument Structure

A priori, one would expect that it should be possible to find verbs of all sorts—transitive, ditransitive, unaccusative, unergative, and so forth—that select LIAE<sup>11</sup> in all sorts of positions. Curiously, however, there appear to be certain “holes” in this paradigm.

### 2.1. Simple transitive constructions

To begin with, simple transitive verbs may either select LIAE in the subject as in (1), repeated below as (17a), and in (18a), or in the object as in (19a) and (20a); however, apparently no transitive verb can select LIAE in both of these positions simultaneously. (Note that, in this work, the terms “transitive” and “simple transitive” will refer only to verbs having two arguments—never to ditransitives.)

- |                                    |   |
|------------------------------------|---|
| (17a) Mary stole the money.        | (17b) *The wind stole the money.          |
| (18a) Mary found the iron filings. | (18b) *The magnet found the iron filings. |

However, as (ii) makes clear, an animate argument incapable of intention will not suffice.

- (ii) \*The bamboo stole my money.  
AGENT

Similarly, the object of (iii) must be sentient in order to successfully fulfill the LIAE-induced role of SENSOR. Hence, here also it is obvious that this argument must be animate.

- (iii) That actor really amazed her audience.  
SENSOR

However, as (iv) makes clear, an animate argument incapable of sentience will not suffice.

- (iv) \*That actor really amazed the trees.  
SENSOR

Finally, the direct and indirect objects of (v) and (vi) must be, respectively, sentient and capable of ownership in order to successfully fulfill the LIAE-induced roles of SENSOR and BENEFICIARY. Hence, once again it is obvious that these arguments must be animate.

- |   |                                   |
|---|-----------------------------------|
| (v) Mary ordered the dog into the street. | (vi) Mary sold a painting to Jane |
| VOLUNTEER                                 | BENEFICIARY                       |

However, as (vii) and (viii) make clear, animate arguments incapable, respectively, of sentience or ownership will not suffice.

- |   |  |
|---|--|
| (vii) *Mary ordered the tree into the street. | (viii) *Mary sold a painting to the dog. |
| VOLUNTEER                                     | BENEFICIARY                              |

Thus, while it is clear that LIAE implicates animacy, it also is clear that the reason that it does so is because it implicates certain specific attributes which are found only on the members of certain proper subsets of the animate NPs.

(11) It may seem awkward to speak of verbs selecting “lexico-interpretational animacy entailment” instead of merely “lexico-interpretational animacy.” However, the current wording is necessary since, as noted in the text, what is important about the verbs in question is not that they select animacy per se but, rather, that they select a semantic interpretation that happens to entail animacy in the arguments in question.

- (19a) That story impressed John. (19b) \*That story impressed the computer.  
 (20a) That story annoyed John. (20b) \*That story annoyed the computer.

On the one hand, as is demonstrated by the unacceptability of (17b) (= 2) and (18b), the verbs in (17a) and (18a) select animacy entailment in their subjects (giving the sense of an AGENT role). As shown by the discussion of example (3) in the Introduction, this animacy entailment is generated by interpretation, and hence represents an instance of LIAE. I want to note here that, among (3), (17a) and (18a), the AGENT role induced by LIAE is on an argument that would otherwise be discerned only as a CAUSER.

On the other hand, as is demonstrated by the unacceptability of (19b) and (20b), the verbs in (19a) and (20a) select animacy entailment in their objects. I claim that the animacy entailment selected here is responsible for producing a "SENSOR" role in this position, where by "sensor" I mean a PATIENT that is affected emotionally.<sup>12</sup> By reasoning parallel to that employed in discussion of the AGENT, sentences like (21) - (24) demonstrate that (19a) and (20a)'s animacy entailment, and hence the sense of a SENSOR role, is interpretational.

- (21) That story agitated John. (22) The earthquake agitated the wine.  
 (23) That story devastated John.  
 (24) The earthquake devastated the building.

(21) - (24) presumably are syntactically identical to (19a) and (20a), yet here animacy entailment, and hence the SENSOR role, is optional. Therefore, it is clear, transitive verbs like those in (19a) and (20a) select LIAE in their objects. I want to note here that, among (21) - (24), the SENSOR role is induced by LIAE on an argument that would otherwise be discerned only as a PATIENT.

Finally, it apparently is impossible for any transitive verb to select LIAE in both its subject and object arguments simultaneously. In other words, in thematic relational terms, there do not seem to exist any transitive verbs that require both an AGENT role in the subject and a SENSOR role in the object.<sup>13</sup> I return to this point in Subsection 2.4.

## 2.2. Unaccusatives

In contrast with the behavior of simple transitives, there do not appear to exist any unaccusative verbs that select LIAE arguments. This is illustrated by the examples in (25) - (26).<sup>14, 15</sup>

(12) I consider an argument to have a SENSOR role just if it is the PATIENT of a (non-ditransitive) verb whose impact is emotional, rather than physical. Thus, for example, while the object of (22) is a PATIENT, the object of (21) is both a PATIENT and a SENSOR.

Note that I distinguish a SENSOR from an EXPERIENCER. For me, the latter term refers to a THEME that happens to be the subject of a psychological predicate, as is the case with the THEMES (hence, EXPERIENCERS) in (6) (=80) and, at the level of lexical relational structure, in (70), (71), (81a) and (82a).

(13) An example of such a verb, if it existed, would be one which (necessarily) meant "to deliberately amaze."

(14) I believe that the verbs in (26) should be considered unaccusative. See note 9.

(15) Of course, the adjectives in (26c-d) do select animacy entailment in the subjects. However, as discussed in the Introduction, this animacy entailment is not LIAE.

- |                             |  |
|-----------------------------|--|
| (25a) The package arrived.  | (25b) The rains came.                          |
| (25c) The clouds descended. | (25d) The sun went down in the west.           |
| (25e) The ship sank.        | (25f) The sun rose.                            |
| (25g) The ball rolled.      | (25h) The stellae remained in Central America. |
| (25i) The glass broke.      | (25j) The ball rolled.                         |
| (25k) The ball bounced.     | (25l) The potatoes cooked slowly.              |
| (26a) The sky grew dark.    | (26b) The light turned red.                    |
| (26c) Mary got mad.         | (26d) John got sick.                           |

I assume that this gap is not accidental, but should be explained by linguistic theory.

### 2.3. The Lexico-Interpretational Animacy Entailment Constraint

I argue that restrictions on the distribution of (selection of) LIAE are due to the effect of (27), where “argument” is defined as in (28).

- (27) Lexico-Interpretational Animacy Entailment Constraint (LIAEC): A lexical interpretation can generate animacy entailment in an argument X if and only if
- (a) X and some argument Y are arguments of the same verbal head; and
  - (b) No lexical interpretation generates animacy entailment in Y.
- (28) Given heads in the configuration [  $a_1 \dots a_i$  ], where each  $a_i$  asymmetrically c-commands  $a_{i+1}$  and no element intervenes<sup>16</sup> between  $a_i$  and  $a_{i+1}$ :  
The specifier of  $a_i$  and the non-predicate<sup>17</sup> complement of  $a_i$  are arguments of each head  $a_j$ .<sup>18</sup>

The intuitive point of (28) is that an item is an argument of a head just if it is the local specifier or complement argument relative to that head.

Seen in this light, (27) claims that LIAE can be generated in an argument only if that argument happens both to be the argument of a verbal head, and to have a coargument in which LIAE is not generated. The remainder of this section shows how (27) correctly predicts the distribution of LIAE.

(16) I assume that a constituent X *intervenes* between two constituents Y and Z if and only if Y asymmetrically c-commands X, and X asymmetrically c-commands Z.

(17) This wording ensures that predicates cannot be arguments. So, for example, since the adjective in (i) is a predicate, it is a complement, but not an argument, of the verbal head.

(i) The sky got dark.

This result guarantees that the subjects of verbs like those in (i) are the sole arguments of their verbal heads, and hence cannot serve as sites for the generation of LIAE.

(18) This notion of argumenthood is closely related to the notion of “coargument” formulated in Minkoff (1994).

## 2.4. Simple transitives again

(27) correctly predicts the permissibility of transitive verbs like those considered in Subsection 2.1, some of which are like (17a) and (18a), selecting LIAE in their subjects, and others of which are like (19a) and (20a), selecting LIAE in their objects. (27) also predicts, apparently correctly, the impermissibility (noted in Subsection 2.1) of any transitive verb that would select LIAE in both its subject and object simultaneously.

In cases like (17a) and (18a), both the subject and object are arguments of the verbal head; hence, the subject satisfies clause (a) of the LIAEC. Furthermore, no lexical interpretation happens to assign animacy entailment to the direct object—in other words, LIAE is not generated in this position. Hence, the subject also satisfies clause (b) of the LIAEC. Therefore, (27) predicts that LIAE can be generated in the subject in cases like (17a) and (18a).

In addition, I propose that verbs can select optional interpretations as a matter of lexical idiosyncrasy. Given this, it follows not only that LIAE is generable in the subjects of verbs like those in (17a) and (18a), but also that LIAE is selectable in such positions. In other words, the theory now correctly predicts that the language should have the potential to create verbs like “steal” and “find”—i.e. transitive verbs that select LIAE (hence the AGENT role) in their subjects.

Next, in cases like (19a) and (20a), both the subject and object are arguments of the verbal head; hence, the object satisfies clause (a) of the LIAEC. Furthermore, here, in contrast to cases like (17a) and (18a), no lexical interpretation happens to assign animacy entailment to the subject—in other words, LIAE is not generated in this position. Hence, the object also satisfies clause (b) of the LIAEC. Therefore, (27) predicts that LIAE can be generated in the object in cases like (19a) and (20a).

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the objects of verbs like those in (19a) and (20a), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like “impress” and “annoy”—i.e. transitive verbs that select LIAE (hence the SENSOR role) in their objects.

Finally, in any simple transitive clause, the subject and object necessarily are arguments of the same verbal head: Therefore, whenever LIAE is generated in either one of these arguments, it will be impossible for the other to satisfy clause (b) of the LIAEC. Thus, (27) predicts that no interpretation of a simple transitive can ever generate LIAE in both the subject and object arguments.

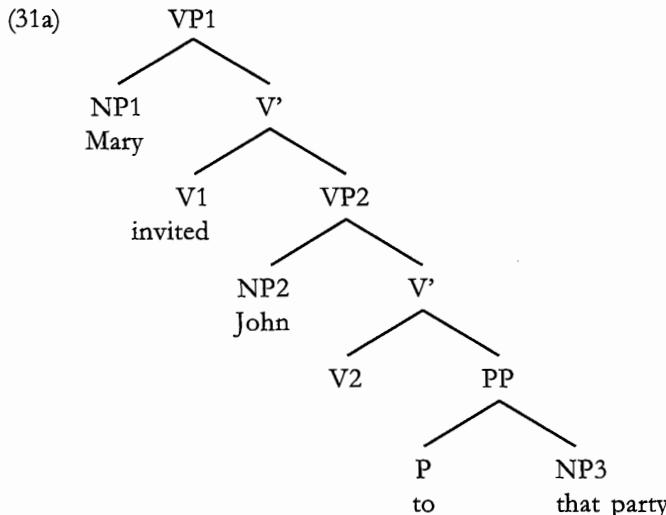
Moreover, on the assumption that the selection of AGENT and SENSOR roles proceeds only via the selection of LIAE, it follows that these roles cannot be selected simultaneously in their respective subject and object positions. In other words, the theory predicts, evidently correctly, that the language should be incapable of creating verbs with meanings like “to deliberately impress” or “to deliberately annoy”—i.e., transitive verbs that would select both LIAE (hence the AGENT role) in their subjects, and LIAE (hence the SENSOR role) in their objects.

## 2.5. Ditransitive constructions

Ditransitive verbs may select LIAE in their subjects as in (29) and (30), in their direct objects as in (29), or in their oblique objects as in (30);<sup>19</sup> however, apparently no ditransitive verb can select LIAE in both the direct and oblique object positions simultaneously.

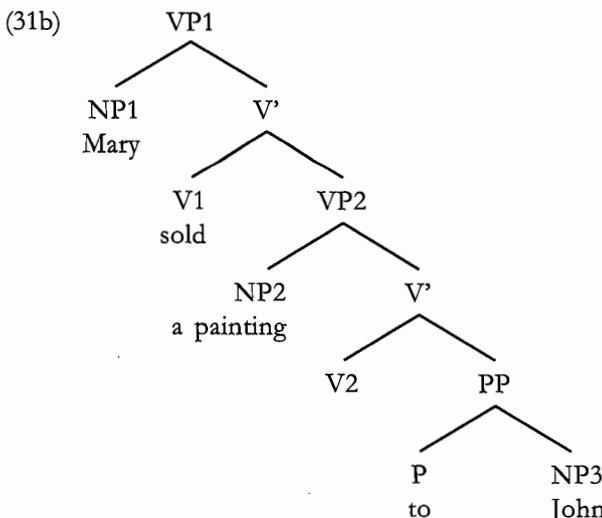
- (29a) Mary invited John to that party.
- (29b) \*Mary invited a large chocolate cake to that party.
- (29c) \*A large chocolate cake invited John to that party.
  
- (30a) Mary sold a painting to John.
- (30b) \*Mary sold a painting to the wall.
- (30c) \*The cash register sold a painting to John.

Each of these aspects of ditransitive behavior is predicted by (27), on the assumption that such verbs are associated with Larsonian structures so that, for example, (29a) and (30a) have roughly the d-structures shown in (31a) and (31b), respectively (cf. Larson 1988, Kayne 1984).



(19) I don't know whether any ditransitive verb can select LIAE on its oblique object without simultaneously selecting LIAE on its subject. There do seem to be verbs that select LIAE on their direct objects only, as in (i).

(i) An appetite for seafood coaxed the kitten out of the tree.



First, (31a) and (31b) show instances in which a ditransitive verb selects animacy entailment, producing the sense of an AGENT role, in its subject. By reasoning parallel to that employed in discussion of the AGENT subject of (17a) (= 1) and (18a), sentences like (32a-b) demonstrate that the animacy entailment in (31a-b), and hence the sense of an AGENT role, is interpretational—in other words, it is an instance of LIAE: (32a-b) presumably are syntactically identical to (31a-b), yet here the animacy entailment in the subject (and hence the sense of an AGENT role) is optional.<sup>20</sup>

(32a) Mary sent John to the doctor's office.

(32b) Rumours about a strange new disease sent John to the doctor's office.

Also note that, in (32a-b), LIAE induces the sense of the AGENT role on an argument that would otherwise be discerned only as a CAUSER.

That ditransitive verbs should be able to select LIAE in their subjects is predicted by the application of (27) to the structures in question, i.e. to (31a-b) in the case in point. Here, both the subject, NP1, and the lower verb phrase, VP2, are arguments of the head V1;<sup>21</sup> hence, the subject satisfies clause (a) of the LIAEC. Furthermore, as is obvious, no lexical interpretation assigns animacy entailment to VP2—in other words,

(20) Note that animacy entailment (agency) is optional even in the case of (32a). For instance, this example could mean that the phenomenon of Mary, and not her agency, is what sent John to the doctor's office, e.g. that John went to the doctor's office as a result of his worries about Mary.

(21) The conclusion that VP2 is an argument of V1, also adopted in Minkoff (1994), follows from the definition in (28) in the text. Also, I believe this conclusion makes intuitive sense. I assume that the semantic content of VP2 amounts to a proposition with an abstract verbal head. So for example, in 31b, VP2 means, in part, "a painting GOES to John." Further, this proposition (= VP2) itself forms the object of the higher verbal head. And the semantic content of the higher verbal head amounts to an abstract causal verb. This has the desired result of making the subject of VP1 the CAUSER of the proposition of VP2. Thus, VP1 means, in part, "Mary CAUSES [a painting TO GO to John]." I believe that analyzing VP2 as the object of V1 follows naturally from the semantic analysis of lexical syntax proposed in H&K 1991a.

LIAE is not generated on the lower VP. Therefore, the subject also satisfies clause (b) of the LIAEC. Thus, (27) predicts that LIAE can be generated in the subject.

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the subjects of verbs like those in (31a-b), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like “invite” and “sell”—i.e. ditransitive verbs that select LIAE (hence the AGENT role) in their subjects.

Also, the contrast between (29a) (= 31a) and (29b) shows that, in (29a) in particular, the ditransitive verb selects animacy entailment in its direct object. Here, animacy entailment produces the sense that the subject believes that the direct object’s interests could be (seen to be) served by the latter’s going to the oblique object. Following the spirit of Minkoff (1994), I assume that this belief concerning the direct object’s interests defines the latter argument as a “VOLUNTEER.”<sup>22</sup>

By reasoning parallel to that employed above, sentences like (33a-b) demonstrate that (29a)’s animacy entailment, and therefore the sense of a VOLUNTEER role, is interpretational—in other words, it is an instance of LIAE: (33a-b) presumably are syntactically identical to (29a), yet here the animacy entailment in the direct object, and therefore the sense of a VOLUNTEER role, is optional. Thus, to reiterate, ditransitive verbs like that in (29) select LIAE in their direct objects.

(33a) The tour guide sent those visitors to the best restaurant in town.

(33b) Mary sent a letter to the best restaurant in town.

Also note that, in (33a-b), LIAE induces the sense of the VOLUNTEER role on an argument that would otherwise be discerned only as a THEME.

That ditransitive verbs should be able to select LIAE in their direct objects is predicted by the application of (27) to (29a) (= 31a). Both the direct object, NP2,

(22) In Minkoff (1994), a “VOLUNTEER” is defined as any THEME that is understood to go volitionally to the GOAL. However, I believe this notion is in need of refinement. For example, in (29a) (=31a), the verb *invite* does not actually specify whether its direct object goes volitionally to the GOAL; indeed, it does not specify whether its direct object in fact goes anywhere at all. Moreover, the same point can be made with respect to the verb *send* in (33a), discussed below in the text. Here, even given the relevant interpretation, *send* does not specify whether its direct object goes volitionally to the GOAL; like *invite*, it does not specify whether its direct object goes anywhere at all. For example, (33a) could describe a situation in which the tour guide sends the visitors to the restaurant in question, but they end up deciding not to go there. (Lest one think that the direct object would fail to be a VOLUNTEER on such a reading, note that, on the reading in question, the sentence still satisfies the diagnostic for the generability of VOLUNTEER-hood developed in Minkoff (1994), namely that control is licensed between the argument in question and the subject of an added fronted infinitival clause as in ‘PRO<sub>i</sub> to get a good meal, the tour guide sent those visitors<sub>i</sub> to the best restaurant in town.’)

I suspect that a “VOLUNTEER” should be defined roughly as in (i).

(i) A THEME “X” of a verb “Y” is a VOLUNTEER if and only if, on the relevant interpretation of the sentence in question, the argument responsible for causing the activity denoted by Y believes that X’s interests could be (seen to be) served by X going to the GOAL of Y.

Now the objects of verbs like *invite* and *send* will satisfy the definition of VOLUNTEER even when they don’t go anywhere at all. For example, the direct objects *John* and *those visitors* will be VOLUNTEERS even if they don’t go anywhere in (29a) and (33a), since these sentences entail (given the relevant interpretation of (33a)) that the subjects *Mary* and *the tour guide* believe that John’s and those visitors’ interests could be (seen to be) served by their going to the party and to the restaurant, respectively.

and the oblique object, NP3, are arguments of the head V2; hence, the direct object satisfies clause (a) of the LIAEC. Furthermore, no lexical interpretation assigns animacy entailment to NP3—in other words, LIAE is not generated in the oblique object. Therefore, the direct object also satisfies clause (b) of the LIAEC. Thus, (27) predicts that LIAE can be generated in the direct object.

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the direct objects of verbs like those in (29a), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like *invite*—i.e. ditransitive verbs that select LIAE (hence the VOLUNTEER role) in their direct objects.

On the other hand, the contrast between (30a) (= 31b) and (30b) shows that, in (30a) in particular, the ditransitive verb selects animacy entailment in its oblique object. Here, animacy entailment produces the sense that the subject believes that the oblique object could (be seen to) acquire some power over the direct object by receiving it. Following the spirit of Minkoff (1994), I assume that this belief concerning the oblique object's acquisition of power defines the latter argument as a BENEFICIARY.<sup>23</sup>

(23) In Minkoff (1994), a “BENEFICIARY” is defined, roughly, as any GOAL that the THEME is understood to be for, in the sense that the GOAL acquires some power over the THEME. (For example, *John* would be a BENEFICIARY in (30a), since one understands that “the painting” is for him, in the sense that he acquires some power over it.) However, I believe this notion is in need of refinements similar to those made for the case of the VOLUNTEER. For example, in (i), below, the verb *bequeath* does not actually specify whether its oblique object, a BENEFICIARY, acquires any power over the THEME; indeed, it does not specify whether its oblique object in fact receives the THEME at all.

(i) Jane bequeathed her car to Sarah.

Moreover, the same point can be made with respect to the verb *send* in (34a), discussed below in the text. Here, even given the relevant interpretation, *send* does not specify whether its oblique object acquires any power over the THEME; like *bequeath*, it does not specify whether its oblique object in fact receives the THEME at all. For example, (34a) could describe a situation in which Mary sends money to Sue but, due to a postal strike, Sue never actually receives it. (Lest one think that the oblique object would fail to be a BENEFICIARY on such a reading, note that, on the reading in question, the sentence still satisfies the diagnostic for the generability of BENEFICIARY-hood developed in Minkoff (1994), namely that control is licensed between the argument in question and the subject of an added infinitival clause as in “Mary sent money<sub>i</sub> to Sue<sub>j</sub> PRO<sub>j</sub> to spend t<sub>i</sub> on her kids.”)

I suspect that a “BENEFICIARY” should be defined roughly as in (ii).

(ii) A GOAL “X” of a verb “Y” is a BENEFICIARY if and only if, on the relevant interpretation of the sentence in question, the argument responsible for causing the activity denoted by Y believes that X could (be seen to) acquire some power over the THEME of Y by receiving it.

Now the oblique objects of verbs like *bequeath* and *send* will satisfy the definition of BENEFICIARY even when they don't receive the THEME at all. For example, the oblique objects *Sarah* and *Sue* will be BENEFICIARIES even if they don't receive the THEMES in (i) and (34a), since these sentences entail (given the relevant interpretation of (34a)) that the subjects, *Jane* and *Mary*, believe that *Sarah* and *Sue* could (be seen to) acquire, respectively, some power over *Jane's car* and *the money* by receiving them.

Note, finally, that my definition of “BENEFICIARY” differs from that used elsewhere in the literature. For example, not all arguments that benefit from the event in which they participate will be BENEFICIARIES in my sense. A case in point would be the direct object in the matrix clause of (iii), which is not a BENEFICIARY for me, even though it apparently would (be seen to) benefit from the activity in question.

(iii) Mary sent John to Rhode Island to have the time of his life.

By reasoning now familiar, sentences like (34a-b) demonstrate that (30a)'s animacy entailment, and therefore the sense of a BENEFICIARY role, is interpretational—in other words, it is an instance of LIAE: (34a-b) presumably are syntactically identical to (30a), yet here the BENEFICIARY role in the oblique object, and therefore the animacy entailment, is optional. Thus, to reiterate, ditransitive verbs like those in (30a) select LIAE in their oblique objects.

- (34a) Mary sent money to Sue.      (34b) Mary sent money to Ocosingo.

Also note that, in (34a-b), LIAE induces the sense of the BENEFICIARY role on an argument that would otherwise be discerned only as a GOAL.

That ditransitive verbs should be able to select LIAE in their oblique objects is predicted by the application of (27) to (30a) (= 31b). Both the direct object, NP2, and the oblique object, NP3, are arguments of the head V2; hence, the oblique object satisfies clause (a) of the LIAEC. Furthermore, no lexical interpretation assigns animacy entailment to NP2—in other words, LIAE is not generated in the direct object. Therefore, the oblique object also satisfies clause (b) of the LIAEC. Thus, (27) predicts that LIAE can be generated in the oblique object.

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the oblique objects of verbs like those in (30a), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like “sell”—i.e. ditransitive verbs that select LIAE (hence the BENEFICIARY role) in their oblique objects.

Finally, it apparently is impossible for any ditransitive to select LIAE in both its direct and oblique object arguments simultaneously. In other words, in thematic relational terms, there do not seem to exist any ditransitive verbs that require both a VOLUNTEER role in the (underlying) direct object and a BENEFICIARY role in the oblique object.<sup>24</sup>

The absence of such verbs is predicted by (27). In any ditransitive clause, the direct and oblique objects necessarily are arguments of the same verbal head; in other words, in (31a-b) for example, NP2 and NP3 both are arguments of V2. Whenever LIAE is generated in either one of these arguments, it will be impossible for the other to satisfy clause (b) of the LIAEC. Thus, no interpretation can ever generate LIAE in both the direct and oblique objects simultaneously.

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Furthermore, not all arguments that are BENEFICIARIES in my sense would be believed to (be seen to) benefit from the power they acquire over the THEME. A case in point would be the oblique object in the matrix clause of (iv), which is a BENEFICIARY for me, even though it most likely would not be believed to (be seen to) benefit from the power in question.

(iv) Mary gave her car to the mechanic to fix.

(One might point out here that the mechanic is likely to be paid for fixing the car; however, notice that she will remain a BENEFICIARY even if one assumes that she is a slave, who will in no way gain from her efforts.)

(24) Note that no such restriction holds between the subject and direct object, nor between the subject and oblique object. The existence of (29a) demonstrates the former, and the existence of (30a) demonstrates the latter.

Moreover, assuming that the selection of VOLUNTEER and BENEFICIARY roles proceeds only via the selection of LIAE, it follows that these roles cannot be selected simultaneously in their respective direct and oblique object positions. In other words, the theory predicts, evidently correctly, that the language should be incapable of creating verbs with meanings like “to act so as to cause (someone) to presumably go, for the sake of her/his own apparent interests, into the possession of, and hence into being under the power of, another”—i.e., intransitive verbs that would select both LIAE (hence the VOLUNTEER role) in their direct objects, and LIAE (hence the BENEFICIARY role) in their indirect objects.<sup>25, 26</sup>

(25) Note that certain verbs, such as that in (i), are quite naturally used in contexts that might create the appearance that LIAE is generated on both the direct and oblique objects.

- (i) I'll introduce you to the host.

However, the point is that “introduce” does not in fact select LIAE in both of these positions, as is made clear by the acceptability of (ii), whose oblique object is inanimate.

- (ii) I'll introduce you to linguistics.

I argue that there is no lexical interpretation that will generate LIAE on both of these arguments, and hence it would be impossible for “introduce” to select LIAE in both.

(26) An anonymous reviewer has raised the question of whether the behavior of the Spanish verb *presentar*, which has a meaning similar to that of English *introduce*, might pose a problem for the claims made here. Unlike *introduce*, *presentar* cannot be used with an inanimate oblique/indirect object, as is clear from the contrast in (iii.a-b).

- (iii.a) A María le present-é a Juan.  
to Mary(OBL.OBJ) 3S.CL introduce-1S.PST to John(D.OBJ)  
“I introduced/presented John to Mary.”
- (iii.b) \*A la lingüística (le) present-é a Juan.  
to linguistics(OBL.OBJ) 3S.CL introduce-1S.PST to John(D.OBJ)  
“I introduced/presented John to linguistics.”

However, I don't see that *presentar* poses any difficulty. First of all, given that the direct object, *John*, is the object of a preposition, I should think that the LIAE would permit the generation of LIAE simultaneously on both the direct and oblique objects. (Although, obviously, one cannot be certain of this in the absence of proposed structures for sentences involving “*presentar*”).

Second, when the structure in question is made to resemble more closely those for which the LIAE would block (simultaneous) LIAE, *presentar* freely accepts an inanimate direct object, as in (iv).

- (iv) A María le present-é mi trabajo  
to Mary(OBL.OBJ) 3SG.CL introduce-1SG.PAST my work(D.OBJ)  
“I presented my work to Mary.”

Thus, there would seem to be no way that this verb could pose any counterexample to the claims made in this work.

Also, the reviewer asks whether problems are presented by sentences like (v), in which, s/he suggests, the subject is an obligatory AGENT and both the direct and oblique objects appear to be obligatory VOLUNTEERS.

- (v) The judge married Pat to Chris.

However, again, this does not strike me as a genuine problem. Although one hopes that anyone who performs a marriage believes that the action could (be seen to) serve the interests of those who are entering the married state, the verb *to marry* does not seem to incorporate such a requirement into its meaning. As far as I can tell, (v) (cf. note 22) might perfectly well describe a situation in which the judge marries Pat to Chris knowing that, as a result of their union, they will only come to harm. So, although *to marry* does require animacy in both its internal arguments, this animacy does not appear to represent an instance of LIAE. (Note that I am assuming here that there does not exist any sentence parallel to (v) whose internal arguments are optionally assigned any thematic roles one might imagine as being selected on the internal arguments of (v) —e.g. try arguing in terms of “SPOUSE-BECOMER” roles, if you like.)

## 2.6. Unaccusatives again

(27) predicts, apparently correctly, the impermissibility of any unaccusative verb that would select LIAE. The surface subject of an unaccusative verb<sup>27</sup> is that verb's sole argument and therefore, obviously, it cannot be the case that the subject and some other argument are arguments of the same verbal head. Hence, there is no way that the subject can satisfy clause (a) of the LIAEC. Thus, (27) predicts that no interpretation can ever generate LIAE in the argument of an unaccusative verb.

Moreover, assuming that the selection of the VOLUNTEER role proceeds only via the selection of LIAE, it follows that no unaccusative verb can select this role. In other words, the theory predicts, evidently correctly, that the language should be incapable of creating unaccusative verbs with meanings like "to (act so as to cause oneself to) arrive, for the sake of one's own apparent interests"<sup>28</sup> —i.e., unaccusative verbs that would select LIAE (hence the VOLUNTEER role) in their subjects.<sup>29</sup>

## 2.7. Conclusion of Section 1

This section has shown that the distribution pattern of LIAE, and hence also of the possibility of LIAE selection, is predicted by the LIAEC, (27), which generates LIAE as an optional interpretation on certain syntactic configurations.<sup>30</sup>

(27) Assuming the unaccusative hypothesis (Burzio 1986, Perlmutter 1978), the subject of an unaccusative is an underlying direct object. Given the structures adopted in the current work (employing binary branching after the spirit of Larson 1988, Kayne 1984), this amounts to saying that the subject of an unaccusative, like the object of a ditransitive, is the subject of the lowest VP in the clause in question.

(28) The wording may seem obscure here, but it is forced by one's having adopted a definition of VOLUNTEER that can handle the transitive cases. A simpler description of an example of an unaccusative verb prohibited by the theory would be one that meant "to intentionally arrive."

(29) This point apparently cannot be made with respect to the AGENT, SENSOR or BENEFICIARY roles since, as far as I can tell, these roles arise from the generation of LIAE on arguments having, respectively, a CAUSER, PATIENT, or GOAL role; none of these latter roles ever arises in the argument of an unaccusative verb.

(30) An anonymous reviewer has suggested that this work would benefit from a discussion of the advantages of using the notion of animacy entailment as opposed to other conceivable competitors: For example, one might appeal to Jackendoff's notion "actor," and ask whether arguments on which animacy entailment is generated might just be "non-actor animates," i.e. "animate... [arguments] which are not merely actors." (Note: Following Jackendoff 1990, X is an actor in the sentence "X 'verb'-ed (Y)" just if it follows here that "what X did was 'verb' (Y)." So, for example, *Mary* is an actor in "Mary built the house" since it follows here that "what Mary did was build the house.")

I respond to the specific suggestion first. An appeal to the notion of "animates which are not merely actors," depending upon how this notion is interpreted, either would be superfluous, or else would prevent the theory from constraining the generation of all of the LIAE-induced roles of AGENT, SENSOR, VOLUNTEER, and BENEFICIARY.

Presumably, the LIAEC would be reformulated along the lines given in (i) (retaining the definition of "argument" given in the text).

- (i) Lexico-Interpretational Animacy-which-is-not-mere-Actorhood Constraint (LIAAC): A lexical interpretation can make an (animate) argument X into an animate argument that is not merely an actor if and only if
  - (a) X and some argument Y are arguments of the same verbal head; and
  - (b) no lexical interpretation makes Y into an animate argument that is not merely an actor.

There is an ambiguity as to how to interpret the phrase "animate argument that is not merely an actor." Suppose this refers to any argument that has both an actor role and some other role in addition. In this case, the notion in

### 3. Derived Verbs

This section uses the theory developed in Section 1 to explain facts about the behavior of derived verbs such as those in (35) - (39).

(35) Mary walked.

(36) Mary shelved the book.

question would compromise the empirical coverage of the theory, because it would block the LIAAC (formerly LIAEC) from applying to the objects of simple transitive verbs, and to the direct and oblique objects of ditransitive verbs.

Given a simple transitive with an AGENT subject, the LIAAC would fail to block the creation of a SENSOR role in the object. This failure would arise since the LIAAC could only limit the interpretation of arguments that happened to be actors: Since the object argument would never be an actor, the LIAAC would have nothing to say about it. So, for example, the LIAAC would fail to predict the impossibility of ever finding any verb that would select both an AGENT subject and a SENSOR object —for example, a verb that would (obligatorily) have the meaning “to deliberately amaze.”

Further, given a ditransitive with a VOLUNTEER direct object, the LIAAC would fail to block the creation of a BENEFICIARY in the oblique object; and given a ditransitive with a BENEFICIARY oblique object, it would fail to block the creation of a VOLUNTEER in the direct object. Again, these failures would follow because the LIAAC could only limit the interpretation of arguments that happened to be actors: Since the direct and oblique objects would never be actors, the LIAAC would have no impact on them. So, for example, the LIAAC would fail to predict the impossibility of ever finding any verb that would select both a VOLUNTEER direct object and a BENEFICIARY oblique object —for example, a verb that would have the meaning “to act so as to cause someone <VOLUNTEER> to presumably go, for the sake of her/his own apparent interests, into the possession of, and hence into being under the power of, another <BENEFICIARY>.”

The above considerations argue strongly against the notion that arguments on which animacy entailment is generated could just be “animate arguments which are not merely actors,” if these latter are understood to be just those animate arguments that have both an actor role and some other role in addition.

On the other hand, “animate arguments which are not merely actors” could be taken to refer to all those animate arguments whose thematic roles contain any semantic element distinct from that of actorhood, regardless of whether they might happen to include actorhood as well. On this interpretation, the theory’s empirical coverage would be restored. For example, given a simple transitive with an AGENT subject, the subject’s thematic role would contain a semantic element distinct from that of actorhood (namely the element of intention on the subject’s part), and so now the LIAAC would block the generation of a SENSOR role in the object since, clearly, the SENSOR role also contains a semantic element distinct from that of actorhood. Similar remarks apply with respect to the behavior of the direct and indirect objects of ditransitive verbs, as I leave it to the reader to verify.

However, now the reference to any notion based on Jackendoff’s “ACTOR,” or indeed to any previous semantic theory that I know of, is made superfluous. This is so because, as the reader may have noted, the theory proposed in the current work apparently would yield the right results even if the LIAAC were broadened to the point of applying to all lexico-interpretational aspects of all semantic roles in general. In other words, as far as I can tell, no empirical coverage would be lost by (re-)formulating the LIAEC along the lines shown in (ii) (leaving “aspect of a semantic role” as a purely intuitive notion for current purposes, and again retaining the definition of “argument” from the text).

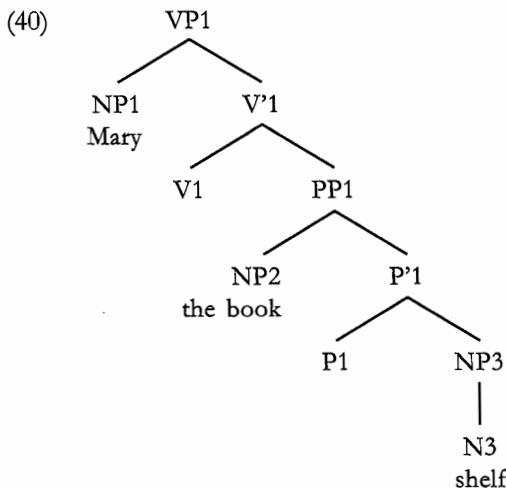
- (ii) Lexico-Interpretational Constraint (LIC): A lexical interpretation can generate an aspect of a semantic role in an argument X if and only if
  - (a) X and some argument Y are arguments of the same verbal head; and
  - (b) no lexical interpretation generates an aspect of a semantic role in Y.

Here, given a simple transitive with an AGENT subject, it will be the case that a lexical interpretation generates an aspect of the subject’s thematic role (again, the element of intention on the subject’s part). Therefore, the LIC will block any SENSOR role in the object, since the creation of such a role would require that a lexical interpretation generate, on the object, an aspect of a semantic role. Similar remarks apply with respect to the behavior of the direct and indirect objects of ditransitive verbs, as I leave it to the reader to verify.

The point here is that, since all of the animacy-entailing roles —AGENT, SENSOR, VOLUNTEER and BENEFICIARY— result from the application of a lexical interpretation, it is possible to constrain these roles’ generation by constraining the generation just of lexico-interpretational roles, abandoning all reference to animacy entailment, non-mere-actorhood, or to any other aspect of these roles’ semantic character. Therefore, returning once again to the reviewer’s suggestion, any reference to “animate arguments which are not merely actors” —where this is taken to mean all those animate arguments whose thematic roles contain any semantic element distinct from that of

- (37) Mary saddled the horse.  
(38) We provisioned those mountain climbers.  
(39a) The gravy thinned. (39b) The cook thinned the gravy.

I assume following H&K that each of these verbs is derived via incorporation of a lexical item from an underlying structure in which the unincorporated item forms the lowest complement in a corresponding clause containing empty heads. For example, H&K (1993) derive (36) from the underlying structure (40).



actorhood— clearly is superfluous: Of course the proposal would work, but only because any proposal will work as long as it permits the LIAEC to constrain the generation of lexico-interpretational (aspects of) thematic roles.

I believe that the above discussion demonstrates that any potential appeal to the notion of "non-merely-actorhood" is superfluous at best, and deleterious at worst.

Moving now to the broader question of the advantages of using the notion of animacy entailment as opposed to any other possible competitor, I believe that the above discussion demonstrates that replacing the notion of animacy entailment with any potential “competitor” semantic notion always will be superfluous in the best case: Once we know that (an aspect of) a thematic role is lexico-interpretational, nothing more needs to be said.

However, this now raises an obvious question: Isn't the notion of animacy entailment, incorporated into the theory developed in this work, also superfluous? I believe the answer to this question is Yes and No.

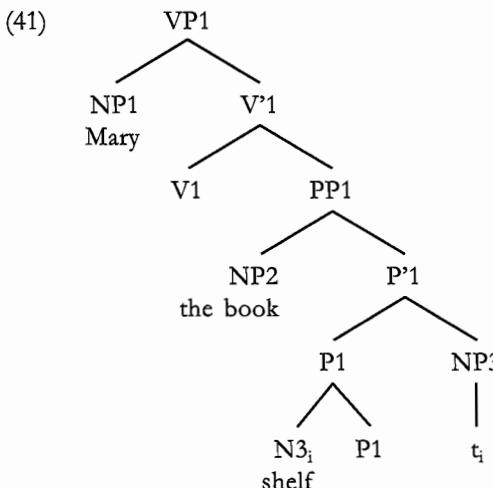
On the one hand, the LIAEC's reference to animacy entailment is superfluous and hence could be eliminated since, as already demonstrated, the LIC given in (ii) handles all the facts without making use of this notion.

On the other hand, however, all of the roles that the LI(AE)C seeks to constrain are, in fact, animacy entailing. Indeed, I believe that all roles that result from the application of any lexical interpretation are animacy entailing. In other words, animacy entailment seems to enjoy a privileged relationship to lexical interpretation — a relationship which is not enjoyed by “non-mere-actorhood,” nor by any other semantic notion with which I am familiar. Thus, it seems that animacy entailment does need to be mentioned somewhere, so that the theory will predict options for the generation of animacy-entailing roles rather than options for the generation of some other kind of role, say for those that directly relate to changes of state or some such. In other words, then, the reference to animacy entailment could well be eliminated from the LIAEC, leaving us with a constraint along the lines of the LIC given in (ii), but only at the cost of adding to the theory some statement along the lines of (iii).

(iii) If (some aspect of) a thematic role X is produced by the application a lexical interpretation, X entails animacy.

I leave the LIAEC as written in the text, but I suspect that the treatment I propose in this footnote is conceptually, though not empirically, superior.

First, the nominal argument *shelf* incorporates (via head-to-head movement, in accordance with the Head Movement Constraint, Travis 1984) into its governing sister, the local head P1, along the lines shown in (41).<sup>31</sup> H&K (1994) (see also Hale & Keyser this volume) argue that this incorporation is driven by the principle of Full Interpretation, requiring that an empty lexical head must be supplied with a phonological matrix in order to be interpreted at PF.<sup>32</sup>

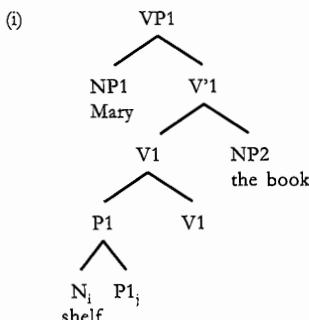


Next this process is repeated, incorporating the compounded item, P1 with N3, into the local head V1 to produce a structure along the lines of (42), which is successfully interpreted at PF, yielding the string (36).<sup>33</sup>

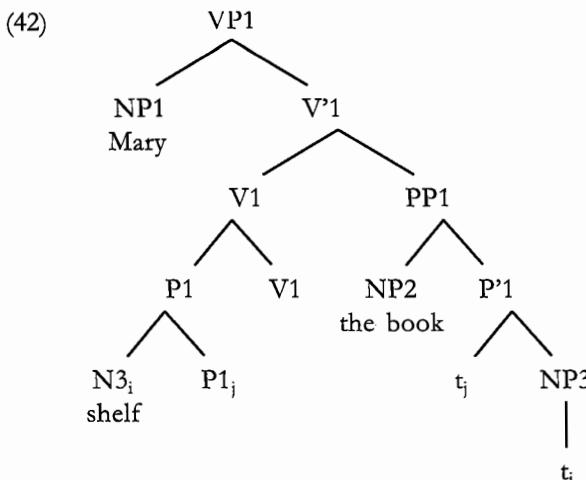
(31) I am assuming that incorporation is a form of adjunction. H&K do not assume this for all cases; in certain instances, they suppose that substitution, rather than adjunction, applies. However, no aspect of the current work is affected by adopting one assumption or the other.

(32) Note that, since this process is driven by the requirements of interpretability at PF, it is not incorporation in the widely accepted sense of Baker (1988).

(33) One might assume, following H&K (1991a) that “tree-pruning” eliminates all projections whose heads have been removed by incorporation, yielding a structure along the lines of (i).



Ken Hale (pc) has suggested to me that an analysis roughly along such lines may be indicated by the acceptability of sentences like (ii).



The underlying structure (40), termed “lexical relational structure” (H&K 1991a), establishes the set of semantic intuitions commonly referred to as “thematic relations.” For example, in (40), the lexical relational structure (“LRS”) —rather than any notion of “thematic role assignment” associated with lexical properties of the verb in question— establishes the intuition that “the book” is a THEME and the “shelf” is a GOAL.

Obviously, this approach entails that the thematic relational intuitions attending LRS persist in the “ordinary syntax” (which might be the output of tree pruning — cf. note 33) associated with the derived verb. In other words, for example, the object of the derived verb “shelve” gives the sense of being a (so-called) “THEME” in ordinary syntax only because that is what this nominal “gives the sense of being” in the related LRS; and the incorporated nominal “shelf” gives the sense of being a “GOAL” in ordinary syntax, since that is what that nominal “gives the sense of being” in the related LRS.<sup>34</sup> Another way to state this is that Hale and Keyser’s LRS has precisely the thematic import for derived verbs that ordinary d-structure has for non-derived verbs.

(ii) Mary shelved the book on the top shelf.

In (ii), the PP “on the top shelf” seems to fill a place originally occupied by a distinct PP in the underlying structure (40), from which the verb *shelve* is derived; thus, some “pruning-like” process seems to ensure that the original PP “gets out of the way” of the PP that is added later.

In any case, however, such pruning is not required for any of the arguments made in the current work.

(34) One might object to the claim that these arguments “give the sense of being” anything at all in LRS, given that one never actually hears an LRS. However, the point can be illustrated by considering the syntactic structures associated with certain relevant non-derived verbs, for example with *put* in (i).

(i) Mary put the book on the shelf.

If one assumes that the d-structure of (i) (cf. 31a-b in the text) is parallel in essential respects to the LRS (40) in the text, then the observation can be made that, in both structures, the NP *the book* gives the sense of being a THEME and the NP “the shelf” gives the sense of being a GOAL. Thus, the theta positions in which arguments are located in LRS might be said independently to “give the sense of being” the relevant thematic relations.

This section will show that the distribution of LIAE on the arguments of derived verbs is constrained by the same principles that constrain its distribution on the arguments of the ordinary (i.e. non-derived) verbs discussed in Section 2: The relations induced by the generation of LIAE, much like the thematic relations considered by H&K, are established at LRS and persist through the formation of the derived verb. This suggests that, at the level of lexical semantics, the relationship between syntax and morphology is richer than has previously been argued.

### 3.1. The selection of LIAE on the arguments associated with derived verbs

The principles restricting the distribution of permissible LIAE selection on the arguments associated with derived verbs are the same as those that restrict the pattern of such selection on the arguments of ordinary verbs, discussed in Section 2. This outcome is predicted on the assumption that the LIAEC applies to LRS.

#### 3.1.1. Unergative verbs

The subjects of unergative verbs can be selected for LIAE, as they are in (43) - (44).

- |                      |                                      |
|----------------------|--------------------------------------|
| (43a) Mary strolled. | (43b) *Mary strolled by accident.    |
| (44a) Mary fished.   | (44b) *Mary is accidentally fishing. |

The contrasts in these examples show that the verbs *stroll*, and *fish* select animacy entailment in their subjects, producing the sense of an AGENT role.<sup>35</sup>

Further, sentences like (45a-b) show, by the familiar reasoning, that the animacy entailment in (43) - (44), and hence the sense of an AGENT role, is interpretationally —in other words, it is an instance of LIAE: (45a-b) presumably are syntactically identical to (43) - (44), yet here the LIAE in the subject (and hence the sense of an AGENT role) is optional.

(35) Note that, for the case of *stroll*, the selection of the animacy entailment responsible for producing the AGENT role cannot be demonstrated by direct substitution of the subject as, for example, in (i).

(i) \*The easel strolled, blown from leg to leg by a strong wind.

The problem here is that, since *stroll* selects a human subject, one cannot tell whether the oddness of (i) is due to the fact that easels are inconsistent with the AGENT role, or simply to the fact that they are not human. Similar remarks apply to the case of *fish*: Here, again, the selection of the animacy entailment responsible for producing the AGENT role cannot be demonstrated by substitution into the subject as in (ii).

(ii) \*The dead tree fished, one of its branches being under water and acting as a hook.

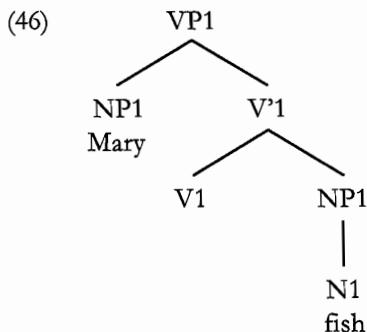
Since *fish* selects a human subject, one cannot tell whether the oddness of (ii) is due to the fact that dead trees are inconsistent with the AGENT role, or rather to the fact that they are not human.

- (45a) Mary hummed.

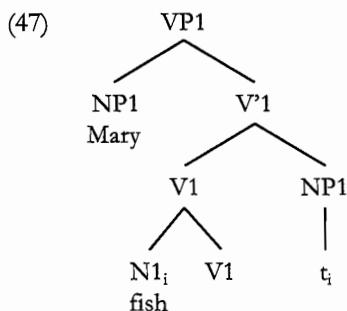
- (45b) The engine hummed.

Also note that, in (45a-b), LIAE induces the sense of the AGENT role in an argument that would otherwise be discerned only as a CAUSER.

The behavior of the unergatives is predicted by (27), assuming that this constraint applies to LRS, and that, following Hale and Keyser (see eg. this volume), such verbs are derived from a transitive LRS, as shown in (46) for the case of (44a).



Here, the object nominal "fish" incorporates (via head-to-head movement) into its governing sister, the local head V1, producing a structure along the lines of (47), which yields the string (44a).



Now, (27) predicts that unergative verbs can select LIAE in their subjects. As can be seen in (46), both the subject NP1 and the object NP2 are arguments of the same verbal head V1; hence the subject satisfies clause (a) of the LIAEC. And since no lexical interpretation happens to assign animacy entailment to the object —in other words, LIAE is not generated on NP2<sup>36</sup>— the subject also satisfies clause (b) of the LIAEC. Thus, (27), applied to LRS, correctly predicts that LIAE can be generated in the subject of an unergative.

(36) Note that LIAE is not generated on the argument *fish* in (46), irrespective of the fact that *fish* themselves presumably are capable of satisfying the selectional needs of LIAE, at least with respect to certain of the thematic roles.

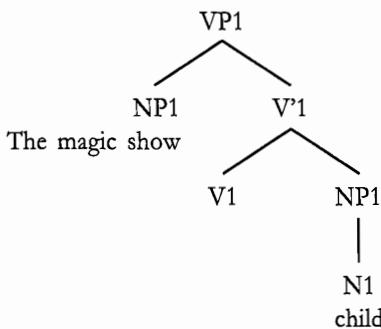
In addition, I propose that the capacity for a verb to idiosyncratically select optional interpretations holds of LRS as well as of d-structure. From this it follows not only that LIAE is generable in the subjects of unergative verbs like those in (43) and (44), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like *stroll* and *fish* —i.e. unergative verbs that select LIAE (hence the AGENT role) in their subjects.

On the other hand, contrary to what one might expect, there do not seem to exist any unergative verbs in which LIAE is selected in the LRS object. In other words, for example, one cannot find unergatives along the lines of the imaginary SENSOR-object verb *child* in (48), meaning something like “to amaze a child.”

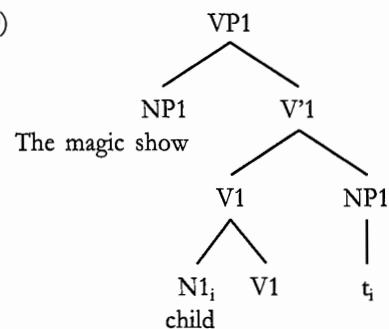
- (48) \*The magic show childed.

The theory developed so far in this work would suggest the possibility of such verbs, deriving from the LRS (49), with the object nominal *child* incorporating into the verbal head to produce a structure along the lines of (50).

(49)



(50)



I propose that the reason that verbs of this kind don't exist is because of a general restriction along the lines of (51).

- (51) Argument Restriction on LIAE: For any item X, if LIAE is generated on X, X must be an argument.

I assume here that, when any nominal attaches to a verbal head, it loses its referential function and consequently ceases to be an argument. Thus, by (51), it is impossible for LIAE ever to persist on any nominal that has become the root of a derived verb.

Assuming that the selection of a SENSOR role proceeds only via the selection of LIAE, it follows that this role cannot be selected on the incorporated direct object. In other words, (51) predicts, evidently correctly, that the language should be incapable of creating unergative verbs with meanings like that of the imaginary

"child" in (48) —i.e., unergative verbs that would select LIAE (hence the SENSOR role) in their underlying direct objects.

### *3.1.2. Verbs derived from ditransitive structures (location, locatum, and "possession" verbs)*

A location or locatum verb can select LIAE in its subject as in (52) - (53), but never in its direct object, nor in its incorporated oblique object.

- (52a) Mary shelved the book.

- (52b) \*Mary shelved the book by accidentally bumping into it.

- (53a) Mary saddled the horse.

- (53b) \*Mary saddled the horse by accidentally bumping into it.

The contrasts in (52) - (53) show that the verbs *shelve* and *saddle* select animacy entailment in their subjects, producing the sense of an AGENT role.

Further, sentences like (54a-b) show, by the usual reasoning, that the animacy entailment in (52) - (53), and hence the sense of an AGENT role, is interpretationally —in other words, it is an instance of LIAE: (54a-b) presumably are syntactically identical to (52) - (53), yet here the animacy entailment in the subject (and hence the sense of an AGENT role) is optional.<sup>37</sup>

- (54a) Mary should center the cursor.

- (54b) A good knock on the side of the monitor should center the cursor.

Also note that, in (52) - (54a), LIAE induces the sense of an AGENT role on an argument that would otherwise be discerned only as a CAUSER.

The same remarks hold with respect to "possession verbs" (which I refer to as such since they derive from possessed nominals), as in (55) - (56).

- (55) We provisioned those mountain climbers.

- (56) \*We provisioned those mountain climbers by accidentally dropping food into their back packs.

The contrast between these examples shows that the verb *provision* denotes a deliberate activity, and therefore it must select animacy entailment in its subject, producing the sense of AGENT role.

(37) Interestingly, most location and locatum verbs seem to require agentive subjects, as in (i) - (vi).

(i) Mary boxed the apples.	(iv) *The earthquake corralled the ponies.
(ii) *The tornado boxed the apples.	(v) The pilot landed the plane.
(iii) Mary corralled the ponies.	(vi) *The wind sheer landed the plane.

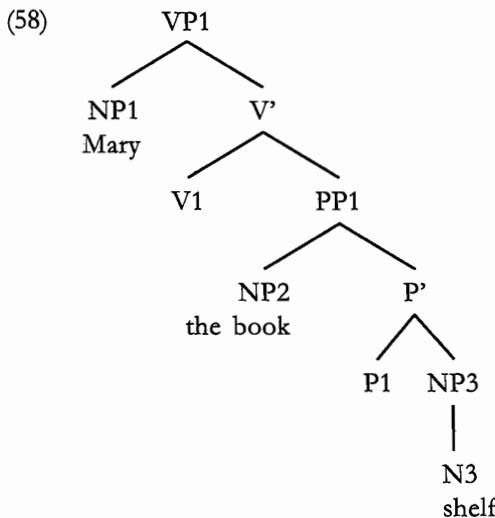
I hope to account for this phenomenon in future work.

Further, (57a-b) show, by the usual reasoning, that the animacy entailment in (55), and hence the sense of an AGENT role, is interpretational —in other words, it is an instance of LIAE: (57a-b) presumably are syntactically identical to (55), yet here the animacy entailment in the subject (and hence the sense of an AGENT role) is optional.

- (57a) Mary watered my lawn pretty well.  
 (57b) That rainstorm watered my lawn pretty well.

Also note that, in (55) - (57a) as in (52) - (54a), LIAE induces the sense of an AGENT role in an argument that would otherwise be discerned only as a CAUSER.

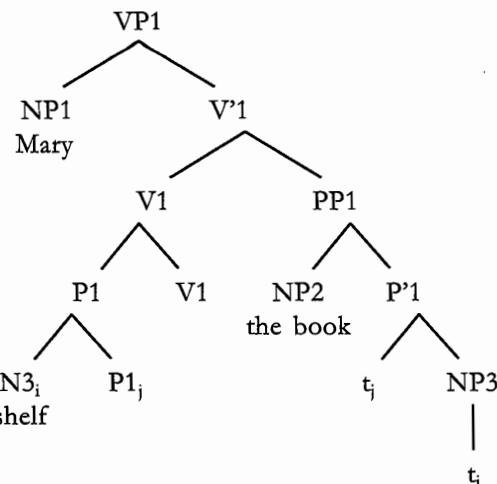
The behavior of the location and locatum verbs is predicted by (27), again assuming that this constraint applies to LRS, and assuming, after a proposal in H&K 1993, that such verbs are derived from a ditransitive LRS, as shown in (58) for the case of (52a).<sup>38</sup>



Here, the oblique object nominal *shelf* incorporates via head-to-head movement, ultimately forming a structure along the lines of (59) (= 52a).

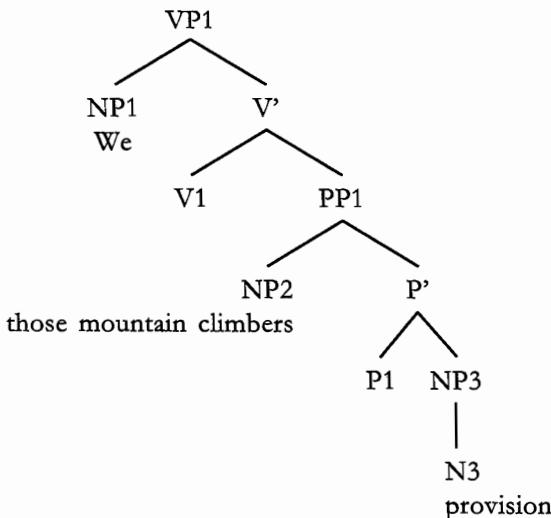
(38) Note that the LRS of the location and locatum verbs differs from the d-structure of the corresponding non-derived ditransitive verbs. The latter have essentially the structure proposed by Larson 1988, containing an embedded verbal projection (cf. Subsection 2.5) which the former lacks (cf. the current subsection). This difference accounts for the fact that, as noted in Subsection 2.5, LIAE can be generated on the direct object of a non-derived ditransitive whereas, as noted in the current subsection, it cannot be generated on the direct object of a location or locatum verb.

(59)



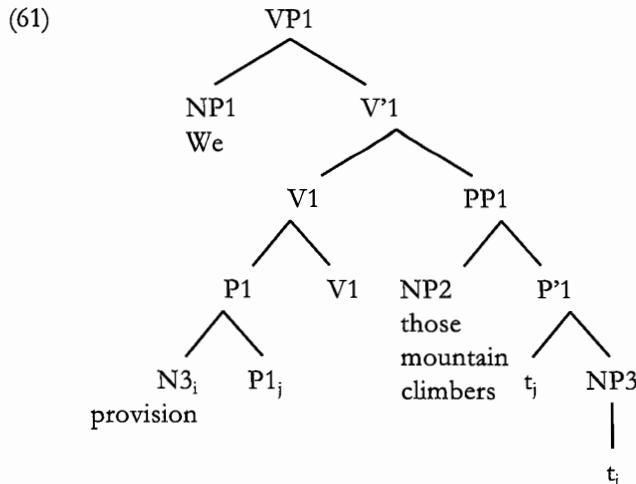
Assuming that possession verbs are derived in the same way as location and locatum verbs, then (27) will predict the behavior of these verbs as well. Such verbs will start from an LRS along the lines shown in (60) for the case of (55).

(60)



In the familiar way, the direct object nominal “provision” incorporates via head-to-head movement, ultimately forming a structure along the lines of (61).<sup>39</sup>

(39) I assume that the difference between location verbs, on the one hand, and locatum and possession verbs on the other, lies in the character of their associated prepositional heads, e.g. in the character of P1 in (58) and (60). In the case of location verbs, the prepositional head is of the category “terminal coincidence” (cf. H&K 1993); in that of locatum and possession verbs, it is of the category “central coincidence” (cf. H&K 1993).



Now the permissibility of LIAE in the subjects of location, locatum and possession verbs is predicted by the application of (27) to LRS. As can be seen in the LRSs (58) and (60), the subject NP1 and the prepositional phrase PP1 are arguments of the same verbal head V1, and therefore the subject satisfies clause (a) of the LIAEC. And, since no lexical interpretation happens to assign animacy entailment to the prepositional phrase —in other words, LIAE is not generated on PP1— the subject also satisfies clause (b) of the LIAEC. Thus, (27) correctly predicts that LIAE can be generated in the subjects of location, locatum and possession verbs.

Moreover, since verbs can select optional interpretations as a matter of lexical idiosyncrasy, it follows not only that LIAE is generable in the subjects of verbs like those in (52), (53) and (55), but also that LIAE is selectable in such positions. In other words, the theory correctly predicts that the language should have the potential to create verbs like “shelve”, “saddle” and “provision”—i.e. verbs derived from ditransitive LRSs that select LIAE (hence the AGENT role) in their subjects.

Interestingly, there does not appear to exist any location, locatum or possession verb that selects LIAE in its object.

On the one hand, verbs like *jail*, *hood* and *provision* do select animacy entailment in their objects, as is indicated by the contrasts in (62) - (64);<sup>40</sup> and one could conceivably argue that this animacy entailment affects the nature of the thematic role in the object.

(40) One might object that the objects of *jail* and *hood* are selected for a property narrower than mere animacy entailment. For example, a dog is animate, but (i) and (ii) seem to me to be slightly degraded.

(i) (?)The police jailed the dog.      (ii) (?)The dean hooded the dog.

In fact, I suspect that the objects of these verbs are selected for the capacity for ownership, the same property selected in nouns that receive LIAE to become BENEFICIARIES, as discussed in note 10. If this is correct, it raises the possibility of discerning configurational principles that would relate thematic attributes produced by the generation of LIAE, on the one hand, and thematic attributes produced by the selection of (non-interpretational) animacy, on the other. I hope to return to this problem in future research.

- (62a) Governments jail dissidents.
- (62b) \*Governments jail threatening documents. (meaning they put threatening documents in jails.)
- (63a) The dean hooded the doctoral recipients.
- (63b) \*The dean hooded the coat rack. (meaning the dean put a hood on the coat rack.)
- (64a) We provisioned those mountain climbers.
- (64b) \*We provisioned those back packs.

Suppose for the sake of argument that animacy entailment makes the direct object into something like an “ENTRAP-EE” in (62) (since the object suffers entrapment at the hands of the AGENT), a “DRESS-EE” in (63) (since the object is dressed by the AGENT), and an “ALIENABLE POSSESSOR” in (64) (since the object gains alienable possession of something at the hands of the AGENT). I am not concerned here to characterize the thematic roles in question with complete accuracy. What matters is that the animacy entailment at issue clearly seems not to be interpretational, i.e. it is not an instance of LIAE, since it cannot be optionally generated by independent means: As far as I can tell, there are no sentences syntactically parallel to (62a), (63a) or (64a), in the objects of which animacy entailment, and hence a role (roughly) along the lines of an ENTRAP-EE, DRESS-EE or ALIENABLE POSSESSOR, is optionally available.

There do exist sentences like (65a-c), which are syntactically parallel to (62) - (64), but in which the direct object lacks animacy entailment (the apples are not an ENTRAP-EE, the bottle is not a DRESS-EE, and the Mary’s pants are not an ALIENABLE POSSESSOR).

- |                               |   |
|-------------------------------|---|
| (65a) Mary boxed the apples.  | (65c) Mary stained her pants. <sup>41</sup> |
| (65b) Mary capped the bottle. |   |

But, again, in no such instance does the relevant animacy entailment become an option.<sup>42</sup>

The reason that optional animacy entailment (and hence an optional role along the lines of ENTRAP-EE, DRESS-EE or ALIENABLE POSSESSOR) is unavailable in the objects of location, locatum or possession verbs is because animacy entailment cannot be generated in this particular position by applying an interpretation to these verbs’ associated LRSs: Thus, LIAE cannot be generated, nor hence selected, on the relevant arguments.

The impermissibility of LIAE, and hence of LIAE selection, in the object is predicted by (27). The argument at issue, represented by NP2 in (58) and (60), is not an argument of any verbal head, and therefore cannot satisfy clause (a) of the LIAEC, (27). Thus, by (27), no interpretation can generate LIAE in the object.

(41) Note that in (65c) Mary’s pants might be said to be a POSSESSOR of the stain, but clearly they are not an ALIENABLE one.

(42) For example, the animate objects do not seem to acquire the roles ENTRAP-EE, DRESS-EE, or ALIENABLE POSSESSOR in (i), (ii) and (iii), respectively.

(i) Mary boxed John.      (ii) Mary capped John.      (iii) Mary stained John.

Moreover, assuming again that the selection of a VOLUNTEER role<sup>43</sup> proceeds only via the selection of LIAE, it follows that this role cannot be selected on the object. In other words, (27) predicts, evidently correctly, that the language should be incapable of creating location verbs with meanings roughly like “to act so as to cause (someone) to presumably go onto a shelf, for the sake of her/his own apparent interests”, locatum verbs with meanings roughly like “to act so as to cause (someone) to presumably get with saddle, for the sake of her/his own apparent interests”, or possession verbs with meanings roughly like “to act so as to cause (someone) to presumably get with provisions, for the sake of her/his own apparent interests” —i.e., verbs derived from ditransitive LRSs that would select LIAE (hence the VOLUNTEER role) in the arguments that underlie their surface objects.

The status of animacy entailment in the objects of location, locatum and possession verbs like those in (62a), (63a) and (64a) seems to parallel that of animacy entailment in the subjects of adjectival-complement intransitives like those in (66a-e) (= 6a-e).

- |                           |                          |
|---------------------------|--------------------------|
| (66a) Mary got mad.       | (66d) Mary became happy. |
| (66b) Mary became sad.    | (66e) Mary was glad.     |
| (66c) Mary turned scared. |                          |

And the status of animacy entailment in the objects of location, locatum and possession verbs like those in (65a-c)<sup>44</sup> seems to parallel that of animacy entailment in the subjects of adjectival-complement intransitives like those in (67a-c) (= (8) - (10)). Animacy entailment is obligatory in all of the former, impossible in all of the latter, and, for structural reasons, is non-interpretational throughout.

- |                        |                         |                     |
|------------------------|-------------------------|---------------------|
| (67a) Mary turned red. | (67b) Mary became tall. | (67c) Mary got old. |
|------------------------|-------------------------|---------------------|

Also, it should be noted here that the impermissibility of LIAE in the object of a location, locatum or possession verb supports the proposal that, in LRS, this argument is in SPEC of PP —as is argued by H&K on independent grounds, and as is illustrated in (58) and (60)— rather than in SPEC of an embedded VP, as a Larsonian structure would have it. (Cf. the structures in Subsection 1.5.)

On the one hand, in a Larsonian structure, the direct and oblique objects both would be arguments of the lower verbal head; and so, whenever it should happen that no lexical interpretation would assign animacy entailment to the oblique, then the direct object argument would satisfy both clauses of the LIAE (27), and therefore would be deemed an acceptable site for the generation of LIAE.

On the other hand, in the LRSs (58) and (60), the direct object is not an argument of any verbal head; hence, it cannot satisfy the LIAE under any circumstances, and so the impermissibility of LIAE follows automatically.

(43) I assume that the VOLUNTEER role would be the relevant one to consider here.

(44) For the sake of argument, I am considering (65c) to be a kind of possession verb. Here, however, the object would have a role along the lines of INALIENABLE POSSESSOR, not that of ALIENABLE POSSESSOR as in (64).

Finally, it appears that, in the LRSs of location, locatum and possession verbs, LIAE can never be generated, nor hence selected, in the oblique object nominal that forms the root of the derived verb. As it happens, the vast majority of location and locatum verbs are like those in (52) - (65) above, deriving from nominals that are themselves inanimate, and hence incapable of serving as sites for the generation of LIAE. The only instance I know of in which such a verb is derived from an animate nominal is the case of *horse*, exemplified in (68), which can have either the locational meaning "to place upon a horse", or the possessorial meaning "to provide with a horse."<sup>45</sup>

- (68) The general horsed the troops.

Here, the underlying oblique object *horse* expresses a GOAL (if the verb is locational) or something along the lines of a THEME (if the verb is possessorial)<sup>46</sup> in the expected way but, clearly, it is not a potential site for LIAE. For example, the horse cannot be interpreted as a BENEFICIARY, i.e. (68) cannot mean that the general believes that the horses could (be seen to) acquire some power over the troops by receiving them; and neither can the horse be interpreted as a VOLUNTEER, i.e. (68) cannot mean that the general believes that the horse's interests could be (seen to be) served by its going to the troops.

The absence of any location, locatum or possession verbs having LIAE in their underlying oblique objects follows both from (27), and also from (51), repeated here as (69), which was formulated to account for the impermissibility of LIAE in the underlying objects of unergative verbs.

- (69) Argument Restriction on LIAE: For any item X, if LIAE is generated on X, X must be an argument.

(27) predicts this outcome since the underlying oblique, represented for example by NP3 in (58) and (60), is not an argument of any verbal head, and therefore cannot satisfy clause (a) of the LIAEC.

And (69) also predicts this outcome since the underlying oblique, having incorporated into the verbal head, loses its referential function and therefore ceases to be an argument.

Moreover, assuming again that the selection of a BENEFICIARY or VOLUNTEER role<sup>47</sup> proceeds only via the selection of LIAE, it follows that neither of these roles can be selected on the underlying oblique. In other words, (27) and (69) each predict, evidently correctly, that the language should be incapable of creating verbs derived from ditransitive LRSs with meanings roughly like "to act so as to cause (something) to presumably go into the possession of, and hence into being under the power of, someone" or like "to act so as to cause (some one a horse) to presumably get with soldiers, for the sake of her/his own apparent interests —i.e.,

(45) On the location reading, a person who is horsed is placed upon a horse, but she does not necessarily possess the animal. On the transfer-of-possession reading, a person who is horsed comes to possess the horse, but she is not necessarily placed upon it.

(46) An intuition is generated according to which the horse moves into a state of being possessed by the (underlying) indirect object.

(47) I assume that the BENEFICIARY and VOLUNTEER roles would be the relevant ones to consider here.

verbs derived from ditransitive LRSs that would select LIAE (hence the BENEFICIARY or VOLUNTEER role) in their underlying oblique objects.<sup>48</sup>

### 3.1.3. Inchoative verbs

Inchoative verbs apparently are unable to select LIAE in any of their arguments.

#### 3.1.3.i. Intransitive inchoatives

When such a verb is intransitive as in (70) - (75), it cannot select LIAE in its subject, which is its sole argument.

- (70) Mary gladdened (at the news).
- (71) Mary saddened (when she heard the news).
- (72) \*The hologram of Mary gladdened (at the news).
- (73) \*The hologram of Mary saddened (when the news came).
- (74) The sky darkened. (75) Mary reddened (with anger).

On the one hand, it is true that certain verbs, such as *gladden* and *sadden*, do select animacy entailment in their subjects, as is made clear by the contrasts in (70) - (73), above. This animacy entailment produces the sense of an EXPERIENCER role in the subject (cf. 6a-e in the Introduction).

However, the animacy entailment selected here is like that seen in the (arguments underlying the objects of) location, locatum and possession verbs: It cannot be optionally generated by independent means, and therefore it is not interpretational, i.e. not an instance of LIAE; as far as I can tell, there are no sentences syntactically parallel to (70 - 71) (specifically, no sentences featuring intransitive inchoative verbs in which, in the subject, animacy entailment, and hence the sense of an EXPERIENCER role, is optionally available).

There do exist sentences like (76) - (77), which are syntactically parallel to (70 - 71), but in which the subject lacks animacy entailment (EXPERIENCER-hood).

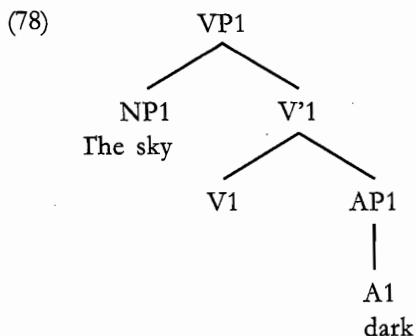
- (76) The gravy thinned. (77) The sky brightened.

But, again, in no such instance does the relevant animacy entailment become an option.

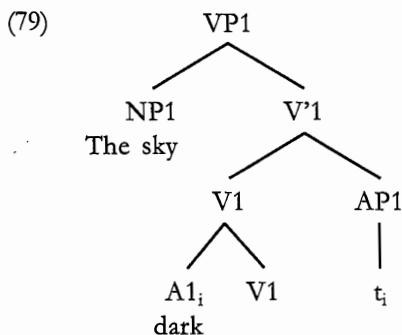
The ungenerability of LIAE here is predicted by (27), again assuming that this constraint applies to LRS, and assuming, following H&K (see Hale & Keyser this volume), that such verbs are derived from an LRS along the lines shown in (78) for the case of (74).

(48) The fact explained here is noted by H&K, who point out that there exist verbs like that in (i), but not like that in (ii).

(i) Mary banked her money. (Meaning Mary put her money in the bank.)  
 (ii) \*Mary churched her money. (Meaning Mary donated her money to the church.)



Here, the adjectival complement *dark* incorporates (via head-to-head movement) into its governing sister, the local head V1, producing a structure along the lines of (79).



Note that the intransitive inchoative LRS represented by (78) is identical to the structure associated with the unaccusatives (6a-e) (= 66a-e), repeated here as (80a-e). The impossibility of generating LIAE in the subjects of intransitive inchoatives is predicted by (27), for the same reasons as it was for the sentences in (80a-e).

- |  |  |
|--|--|
| (80a) Mary got mad.<br>(80b) Mary became sad.<br>(80c) Mary turned scared. | (80d) Mary became happy.<br>(80e) Mary was glad. |
|--|--|

The argument at issue, represented by NP1 in the LRS (78), is the argument of a verbal head, represented by V1, but it is the only argument that this head has. Therefore, it cannot satisfy clause (a) of (27). Consequently, no interpretation can generate LIAE on it.

Moreover, assuming again that the selection of a VOLUNTEER role<sup>49</sup> proceeds only via the selection of LIAE, it follows that this role cannot be selected on the argument in question. In other words, (27) predicts, evidently correctly, that the language should be incapable of creating intransitive inchoative verbs with mean-

(49) I assume that the VOLUNTEER role would be the relevant one to consider here.

ings roughly like “to act so as to cause oneself to become happy, for the sake of one’s own apparent interests” —i.e., verbs derived from intransitive adjectival-complement LRSs that would select LIAE (hence the VOLUNTEER role) in their subjects.

Finally, note that the status of animacy entailment in the subjects of intransitive inchoative verbs like those in (70 - 71) seems to parallel that of animacy entailment in the subjects of adjectival-complement intransitives as in (80a-e) (= 66a-e, 6a-e), and in the (arguments underlying the surface) objects of location, locatum and possession verbs as in (62a), (63a) and (64a), respectively. And the status of animacy entailment in the subjects of intransitive inchoative verbs like those in (74 - 77) seems to parallel that of animacy entailment in the subjects of adjectival-complement intransitives as in (67a-c) (= (8 - 10)), and in the (arguments underlying the surface) objects of location, locatum and possession verbs as in (65a-c), respectively. Animacy entailment is obligatory in all of the former, impossible in all of the latter, and, for structural reasons, is non-interpretational throughout.

### 3.1.3.ii. Transitive inchoatives

When inchoative verbs are transitive, as in (81) - (82), they are unable to select LIAE on either their subject or object argument.

- (81a) The news gladdened Mary.
- (81b) \*The news gladdened the hologram of Mary.
- (82a) The news saddened Mary.
- (82b) \*The news saddened the hologram of Mary.

On the one hand, the contrast in (81) - (82) makes it clear that transitive inchoatives can select animacy entailment in the object. This animacy entailment produces the sense of an EXPERIENCER role in the object (cf. Subsection 3.1.3.i).

However, the animacy entailment selected here is like that seen in the subjects of intransitive inchoative verbs, and in the (arguments underlying the objects of) location, locatum and possession verbs: It cannot be optionally generated by independent means, and therefore it is not interpretational, i.e. not an instance of LIAE; as far as I can tell, there are no sentences syntactically parallel to (81 - 82) (i.e. no sentences featuring transitive inchoatives) in which, in the object, animacy entailment, and hence the sense of an EXPERIENCER role, is optionally available.

There do exist sentences like (83) - (84), which are syntactically parallel to (81 - 82), but in which the object lacks animacy entailment (EXPERIENCER-hood).

- (83) The clouds darkened the sky. (84) The fire reddened the tomatoes.

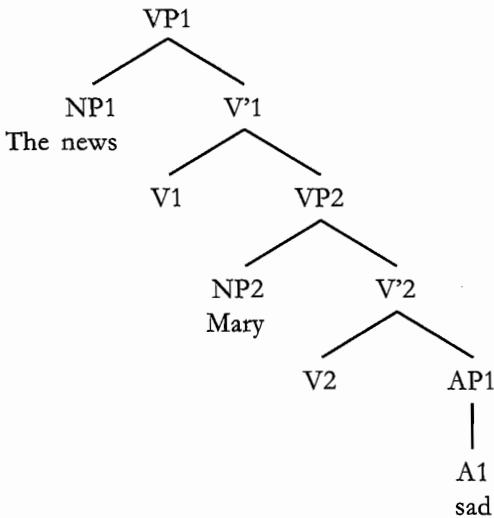
But, again, in no such instance does the relevant animacy entailment become an option.<sup>50</sup>

(50) (i) presents an interesting example in this connection.

(i) \*The news reddened Mary (with anger).

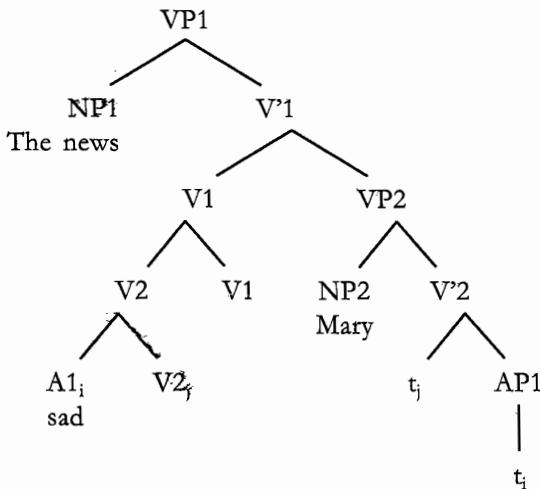
The ungenerability of LIAE here is predicted by (27), again assuming that this constraint applies to LRS, and assuming, following H&K, that such verbs are derived from an LRS along the lines shown in (85) for the case of (82a).

(85)



Here, the adjectival complement *sad* incorporates via head-to-head movement, ultimately forming a structure along the lines of (86).

(86)



The impermissibility of LIAE follows essentially for the same reasons as it does with respect to the subjects of the intransitive inchoatives, considered above. The argument

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Here, pragmatic considerations force one to look for a reading that would generate LIAE on the object, to produce a SENSOR role. But, since LIAE is never available in the objects of transitive inchoatives, (i) is rendered unacceptable.

at issue, represented by NP<sub>2</sub> in the LRS (85), is the argument of a verbal head, represented by V<sub>2</sub>, but it is the only argument that this head has. Therefore, it cannot satisfy clause (a) of (27). Consequently, no interpretation can generate LIAE on it.

Moreover, assuming again that the selection of a VOLUNTEER role<sup>51</sup> proceeds only via the selection of LIAE, it follows that this role cannot be selected on the argument in question. In other words, (27) predicts, evidently correctly, that the language should be incapable of creating transitive inchoative verbs with meanings roughly like “to act so as to cause (someone) to become happy, for the sake of her/his own apparent interests”—i.e., verbs derived from transitive adjectival-complement LRSs that would select LIAE (hence the VOLUNTEER role) in their objects.

A transitive inchoative also cannot select LIAE in its subject, but this is a slightly subtler point.

At first glance, it would appear that transitive inchoatives in fact can select LIAE in their subjects since, as (87 - 90) demonstrate, such arguments indeed can serve as sites for the generation of interpretational animacy entailment.

- (87a) The cook thinned the gravy.
- (87b) The rainwater thinned the gravy.
- (88a) The street sweeper cleared the roadway.
- (88b) The high winds cleared the roadway.
- (89a) John cleaned the clothes.
- (89b) The washing machine cleaned the clothes.
- (90a) The farmer fattened the pig.
- (90b) A diet of lard fattened the pig.

Among (87) - (90), the subject of each *a* sentence can be understood as an AGENT, while the subject of each *b* sentence cannot. The animacy entailment on which this AGENT role depends must be considered interpretational since the members of each *a* and *b* sentence pair are identical save for the character of their subjects.

However, there do not appear to exist any transitive inchoatives in which the interpretational animacy entailment in the subject actually is selected. In other words, there do not seem to exist any transitive inchoatives whose acceptability requires interpretational animacy entailment in the subject. So, while the animacy entailment at issue here is indeed interpretational, it apparently is not lexico-interpretational—in other words, it cannot be an instance of LIAE.<sup>52</sup>

(51) I assume that the VOLUNTEER role would be the relevant one to consider here.

(52) Other instances of animacy entailment that are interpretational but not lexico-interpretational can occur in the subjects of unaccusatives as in (i), in the surface subjects of passives as in (ii), or in the surface subjects of raising verbs as in (iii).

- (i) In order PRO<sub>i</sub> to annoy her host, Mary<sub>i</sub> arrived hungry.  
(Cf. \*In order PRO<sub>i</sub> to annoy Mary's host, the package<sub>i</sub> arrived dirty.)
- (ii) Mary<sub>i</sub> was examined by the doctor in order PRO<sub>i</sub> to please her worried friends.  
(Cf. \*The specimen<sub>i</sub> was examined by the doctor in order PRO<sub>i</sub> to please Mary's worried friends.)
- (iii) PRO<sub>arb</sub> seeming to be industrious is hard work.

Of course, this result contradicts expectations: Based upon the LIAEC (27), one would predict that the subject of a transitive inchoative should readily serve as a site for LIAE. As can be seen in the LRS (85), both the subject NP1 and the lower verb phrase VP2 are arguments of the verbal head V1, and hence the subject satisfies clause (a) of the LIAEC. And, since no lexical interpretation could ever select animacy entailment in VP2, the subject also satisfies clause (b) of the LIAEC. Thus, (27) would predict that LIAE should be generable in the subject; and therefore, one would think that it should be possible to find such verbs that would select LIAE in their subjects.

However, I do not believe that transitive inchoatives represent a genuine counterexample to the LIAEC. Instead, these cases seem to follow a broader pattern: In general, in any sentence whose verb can alternate between intransitive and transitive variants, the status of animacy entailment in the subject of the transitive is determined by the status of animacy entailment in the subject of the intransitive.

So, for the cases in point, LIAE is impermissible in the subjects of transitive inchoatives because it is impermissible in the subjects of the related intransitive inchoatives (cf. Subsection 3.1.3.i).

This relation extends to non-inchoatives as well. Consider, for example, the behavior of the transitive non-inchoatives in (91) - (92).

- (91a) Mary walked the dog down the street.
- (91b) \*The wagon walked the dog down the street.<sup>53</sup>
  
- (92a) The general marched the soldiers into the field.
- (92b) \*A strong wind marched the soldiers into the field.

The contrasts in these cases show that the transitive verbs *march* and *walk* select animacy entailment in their subjects, producing the sense of an AGENT role. Further, sentences like (93 - 96) show, by the familiar reasoning, that the animacy entailment in question, and therefore the sense of an AGENT role, is interpretational —in other words, it is an instance of LIAE: (93 - 96) presumably are syntactically identical to (91 - 92), yet here the animacy entailment in the subject (and hence the sense of an AGENT role) is optional.

- |  |                                       |
|--|---------------------------------------|
| (93a) Mary moved the leaves.                         | (93b) The wind moved the leaves.      |
| (94a) Mary broke the plate.                          | (94b) The earthquake broke the plate. |
| <br>   |                                       |
| (95a) Mary dropped a ton of snow onto my roof.       |                                       |
| (95b) That storm dropped a ton of snow onto my roof. |                                       |

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Animacy entailment is required in the arguments in question (underlined in each example), producing the sense of an AGENT role. However, the verbs in question clearly do not select animacy entailment in these arguments, and therefore the animacy entailment in evidence must be interpretational. At the same time, it also turns out that there are no unaccusative, passive, or raising verbs that ever select LIAE in their surface subjects. Therefore, this animacy entailment, though interpretational, clearly is not lexico-interpretational.

(53) Note that one could imagine a circumstance in which a dog was leashed to a wagon, and the wagon was rolling down the street with the dog in tow. However, even describing this situation, (91b) remains unacceptable.

- (96a) Mary rolled the ball down the street.  
 (96b) The force of the wind rolled the ball down the street.

Thus, to reiterate, transitive non-inchoative verbs like those in (91 - 92) can select LIAE in their subjects.<sup>54</sup>

Now, the status of animacy entailment in the subject of each of (91 - 96) is determined by the status of animacy entailment the subject of the related intransitive form. Animacy entailment is optional in the subjects of (93 - 96) since it is optional in the subjects of (97) - (100).

- |  |  |
|--|--|
| (97a) The leaves moved.<br>(98a) The plate broke.<br>(99a) A ton of snow dropped onto my roof.<br>(99b) Mary dropped onto my roof.<br>(100a) The ball rolled down the street.<br>(100b) Mary rolled down the street. | (97b) Mary moved.<br>(98b) The horse broke.<br>(100a) The dog walked down the street.<br>(100b) *The easel walked down the street. |
|--|--|

And animacy entailment is obligatory in the subjects of (91 - 92) since it is obligatory in the subjects of (101 - 102).<sup>55</sup>

- |  |   |
|--|---|
| (101a) The soldiers marched into the field.<br>(101b) *The easel marched into the field. | (102a) The dog walked down the street.<br>(102b) *The easel walked down the street. |
|--|---|

On the basis of these considerations, I conclude that the blocking of LIAE in the subjects of transitive inchoative verbs is due to factors, operating independently of the LIAEC, which make the animacy entailment of the subjects of transitive verbs in general a function of the animacy entailment of the subjects of their related intransitive variants. I hope to explore this phenomenon in future research.

### 3.2. Conclusion of Section 3

This section has shown that the principles governing the distribution pattern of LIAE, and hence also of the possibility of LIAE selection, on the arguments associated with derived verbs are the same as those restricting these patterns on the arguments of ordinary verbs, discussed in Section 2. The LIAEC generates LIAE as an optional interpretation on arguments in base generated syntax, be it in the LRSs of derived verbs or in the d-structures of non-derived verbs;<sup>56</sup> the selection of LIAE proceeds only via the selection of such an optional interpretation.

(54) It is not clear to me whether the verbs in (91) - (92) ultimately are derived in H&K's sense, but this should not detract from the point being made here.

(55) Note that (101b) and (102b) remain unacceptable even if they are used to describe a circumstance in which a strong wind blows the easel forward so that it moves down the street, or into the field, alternately landing on one leg and then the other.

(56) Or, alternatively, the LIAEC generates LIAE as an optional interpretation on theta positions in the s-structures of non-derived verbs.

In addition, the ungenerability of LIAE in the (arguments underlying the surface objects of) the location, locatum and possession verbs argues, at least mildly, in favor of the LRSs proposed by H&K, and adopted in this work, to account for the derivation of these verbs.

#### 4. Conclusion

This work argues for broadening the project of reducing thematic relations to syntax. On the one hand, thematic relations, conceived sufficiently narrowly, do indeed seem to reduce to properties of syntactic configuration, as H&K, and Jackendoff before them, have proposed. However, relations of LIAE, distinct from thematic relations in this strictest configurational sense, do not reduce to syntax but, instead, are generated by the application to syntax of a certain optional interpretation. This interpretation is constrained by the abstract syntactic principles stated in the LIAEC; but it is distinct from syntax itself.

Moreover, it appears that the generation of LIAE is the only means by which the AGENT, VOLUNTEER, BENEFICIARY and SENSOR roles can be produced. This means that the LIAEC imposes restrictions on any verb that selects any of these roles, effectively limiting the kinds of selection restrictions, and the combinations thereof, that can be generated by the lexicon.

Further, when it comes to the arguments of derived verbs, the restrictions on the generation (and hence selection) of LIAE indicates that any such instances of LIAE must originate on the syntax of LRS —leading to the natural generalization that LIAE is generated on base generated syntax, be it on the LRSs of derived verbs or on the d-structures of non-derived verbs. This means that the morphology of derived verbs must, so to speak, “remember” the LIAE (or the ungenerability thereof), possibly even after the LRS on which it was generated, and even selected, no longer exists.<sup>57</sup> Thus, at the level of lexical semantics, the relationship between syntax and morphology appears to be richer than has previously been argued.

Finally, the conception developed in this work may bring a certain binary order to much of the thematic relational realm, because it holds that, for each of a variety of thematic relations established by syntactic structure, there exists an animacy entailing subcase created by the generation of LIAE. For the CAUSER role there exists the LIAE-induced subcase AGENT; for the PATIENT role, the LIAE-induced subcase SENSOR; for the THEME role, the LIAE-induced subcase VOLUNTEER; and for the GOAL role, the LIAE-induced subcase BENEFICIARY. To the extent that such a “bifurcation” of semantic roles is on the right track, it lends support to the thrust of this work.

(57) Presumably, the LRSs in question would cease to exist if “tree-pruning” applies, as suggested with respect to ditransitive LRSs in note 33. Evidence like that presented in note 33 also can be created with respect to unergatives as in (i) - (ii), and also perhaps with respect to inchoatives as in (iii) - (iv).

- (i) Mary burped a huge burp.
- (ii) We ran a run so long, you'd think we were world class athletes.
- (iii) ?The sky brightened so bright, it was blinding.
- (iv) ?We cleaned the yard so clean, you could've smelled a raindrop.

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