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**The Internal Structure of Arguments:
Evidence from Italian Nominalization-based Complex
Predicates**

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1. Introduction and Overview

As Grimshaw clearly explains in her book (1990), the argument structure of a lexical item interfaces with its Lexical Conceptual Structure (LCS), which represents its lexical meaning. Of the participants involved in the activities or states represented by the LCS, only some are also listed as arguments in the argument structure and consequently syntactically projected as such (on LCS, see among others Hale & Kayser 1986a, 1986b; Jackendoff 1983, 1987, 1990; Rappaport & Levin 1986, Zubizarreta 1985, 1987).

Current representations of argument structure do not explicitly represent this relation between arguments and LCS-participants: the representation of an argument implicitly encodes also its relation to the corresponding LCS-participant. Consider for example the argument structure for *freeze* and the corresponding LCS in (1a) and (1b) below, respectively built on the base of Grimshaw (1990) and Jackendoff (1983, 1990).

- (1) a. *freeze* (x (y))
b. LCS: CAUSE (W, (BECOME (Z, ICE)))

The argumental unit *x* simultaneously represents the relation to the LCS-participant *W*, which constitutes the agent of the LCS, and the fact that this participant is an argument of *freeze*. The same of course holds of *y*. With minor differences, this simultaneous representation occurs in all best known proposals for argument representation (among others, Zubizarreta 1987; Rappaport & Levin 1986; Belletti & Rizzi 1988; Marantz 1984; Di Sciullo & Williams 1987).

In this work, I propose a refinement of the representation of arguments. I will argue that the analysis of thematic transfer in Italian nominalization-based complex predicates requires an explicit decomposition of arguments into *argumental variables*, encoding argumenthood as conceived in Grimshaw (1990), and *thematic indexes*, relating argumental variables to the LCS.

For example, each argument of *freeze* is decomposed into an argumental variable, here *x* and *y*, and a thematic index, here *i* and *k*.

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- (2) a. freeze (x_i (y_k))
 b. LCS: CAUSE (W_i, (BECOME (Z_k, ICE)))

Thematic indexes explicitly represent the relation between argumental variables (*a-variables*) and the corresponding LCS-participants, here represented themselves as variables. An unindexed *a-variable* is uninterpretable, because the argument structure that contains it does not provide any semantic information. It becomes interpretable only when linked to an LCS-variable through a thematic index. LCS-variables are in fact directly interpretable in virtue of their being part of the LCS, and thematic indexes extend this interpretation to all coindexed *a-variables*. For example, the above indexation between the *a-variables* of (2a) and the LCS-variables in (2b) ensures that *x* is interpreted as the agent and *y* as the theme of the event expressed by the predicate *freeze*.

The function of *a-variables* is to encode argumenthood. Only the LCS-variables linked to an *a-variable* are syntactically projected as arguments of some predicate and therefore benefit of the related syntactic properties, such as for example obligatory realization (Grimshaw 1990). All other LCS-variables are realized only optionally, mostly in the form of adverbs and adjuncts, and are void of the syntactic properties characterizing argumental constituents.

Argument decomposition aside, all other aspects of the proposed argument structure representation are adopted directly from Grimshaw (1990). First, *a-variables* are anonymous, because their argumental function (i.e. *agent*, *goal*, *theme*, etc.) is already determined by the role played by the corresponding LCS-variable in the LCS (see also Rappaport & Levin 1986, Zubizarreta 1987). Second, the total number of *a-variables* provides the overall argumental *adicity*¹ of a predicate. Third, the relative thematic prominence of distinct arguments is represented through parenthetical nesting, and is determined through the thematic hierarchy *agent* > *experiencer* > *goal/source/location* > *theme* (Jackendoff 1972:43).

When considered as a whole, an indexed *a-variable* is equivalent to the classical notion of argument or ‘theta-role’, and is therefore subject to the Theta-Criterion. An accurate definition of this criterion would take us too far afield, therefore I adopt for the time being its classical conception and assume that each indexed *a-variable* is assigned to one and only one syntactic constituent, and that a syntactic constituent can saturate one and only one indexed *a-variable* (Chomsky, 1981:36).

The argument decomposition just proposed is necessary for a proper understanding of Italian nominalization-based complex predicates. Descriptively, they have the

¹ The word *adicity* is a mathematical term denoting the number of arguments of a function. In its linguistic use, it denotes the number of arguments of a predicate.

shape in (3), with a light verb taking as complement a noun which is itself the nominalization of the past participle of a verb. As is characteristic of complex predicates, the light verb appears to import the arguments of its nominal complement, which in turn inherits its argument structure from its verbal base (a detailed discussion of the nominal complement will follow in §2).

(3) Nominalization-based complex predicates: $V_{\text{light}} + [V_{\text{past-participle}}]_{\text{N}}$

The first interesting property of these constructions is that the light verb is not uniform, but changes according to the argument structure of the nominalization. Nominalizations based on intransitive verbs select *fare* (to do), while nominalizations based on transitive verbs select *dare* (to give), see the two examples in (4) below.

- | | | |
|-----|---|--|
| (4) | a. <i>fare una camminata</i>
to-do a walking
<i>to walk</i> | b. <i>dare una lavata alle camicie</i>
to-give a washing to-the shirts
<i>to wash the shirts</i> |
|-----|---|--|

A second even more striking property concerns how arguments are affected by thematic transfer. As will be shown in §2, verb based nominalizations suppress the original external argument of their base, much like a verb's external argument is suppressed in passives (Grimshaw 1990). It is thus possible to examine how thematic transfer applies to suppressed arguments. As it turns out, these arguments lose their suppressed status, and 'resurrect' as unsuppressed once transferred to the light verb.

The two properties just described follow straightforwardly once light verb formation and thematic transfer are modeled as operations targeting thematic indexes alone, while leaving a-variables untouched.

In particular, drawing from Ritter & Rosen (1993), Butt (1995), Rothstein (1995), and Grimshaw (1993, 1997), I will argue that light verbs are derived from their non-light verbal counterparts by erasing the thematic indexes of the original argument structure, with no need to posit distinct lexical entries for the light and non light version of each verb. Crucially, index erasure leaves the original a-variables unscathed, thus preserving the original argumental adicity of the verb. The light verbs *fare* and *dare* would be derived as shown in (5) below.

(5) Light verb formation via index erasure

	<i>Before index erasure:</i>	<i>After index erasure:</i>
a.	fare (u _i (v _j))	fare _{light} (u (v))
b.	dare (u _i (v _j (w _k)))	dare _{light} (x (v (w)))

The a-variables of the light verb require an index for their interpretation, and therefore trigger the transfer of the indexes of their complement. Thematic transfer is thus restricted to indexes alone, as schematized in (6) below. The indexes of the a-variables of the nominalization N are copied onto the indexless a-variables of the matrix light verb. Once completed through the imported indexes, the a-variables of the matrix verbs are no longer distinguishable from those of the complement, because they are linked to the same LCS-variables. For example, the constituent that syntactically realizes u_i in (6a) below also realizes the nominalization argument x_i because both a-variables are linked to the same LCS-variable via the index i . This gives the impression that thematic transfer targets whole arguments rather than just thematic indexes.

(6) Thematic transfer is index transfer

	<i>Before index transfer:</i>	<i>After index transfer:</i>
a.	fare _{light} (u (v)) + N ₁ (x _i (y _j))	fare _{light} (u _i (v _j)) + N ₁ (x _i (y _j))
b.	dare _{light} (u (v (w))) + N ₂ (x _i (y _j (z _k)))	dare _{light} (u _i (v _j (w _k))) + N ₂ (x _i (y _j (z _k)))

Although a detailed discussion will have to wait until later sections, the logic of how *light verb selection* and *suppressed argument resurrection* are going to be derived is already apparent from the model of complex predicate formation just provided.

The apparent ‘selection’ of light verbs follows from the non-interpretability of unindexed a-variables. If in (6a) *fare_{light}* were replaced by *dare_{light}*, one of the a-variables of *dare_{light}* would remain unindexed, and therefore uninterpretable, because N₁ does not have sufficient indexes to transfer. Note that this predicts that *fare_{light}* could cooccur with the tri-argumental complement N₂, because this has sufficient indexes to cover all the a-variables of *fare_{light}*. The prediction is borne out, and will be discussed in §3 with other details of the analysis.

As for the apparent resurrection of suppressed arguments, its analysis constitutes the strongest case for separating a-variables from thematic indexes. Under argument decomposition, suppressed arguments can be represented as suppressing only their a-variable, while leaving the associated thematic index unsuppressed. This is represented in (7a) below for the case of *fare*: angle brackets surround the suppressed a-variable x in the argument structure of the nominal complement. The index

remains free to transfer. When it transfers, as in (7b) below, it necessarily lands on the a-variable of the light verb, which, given the way light verbs are formed, is never suppressed. It follows that the newly formed argument u_i is inevitably non-suppressed, but since it shares the index of the complement's suppressed a-variable, the transfer yields the impression of turning suppressed arguments into unsuppressed ones.

(7) Transfer of suppressed arguments under argument decomposition.

- a. *Before index transfer:* $\text{fare}_{\text{light}}(\mathbf{u}(\mathbf{v})) + \mathbf{N}(\langle \mathbf{x} \rangle_i(\mathbf{y}_k))$
 b. *After index transfer:* $\text{fare}_{\text{light}}(\mathbf{u}_i(\mathbf{v}_k)) + \mathbf{N}(\langle \mathbf{x} \rangle_i(\mathbf{y}_k))$

Note that if arguments were undecomposable units, suppression would necessarily affect the whole argument, and therefore be retained once the argument is transferred, as sketched in (8) below. The resulting complex predicate should be available only in its passive form. An incorrect prediction, as we will see in §4, where the details of the arguments will be filled in.

(8) Transfer of suppressed arguments without argument decomposition

- a. *Before the transfer:* $\text{fare}_{\text{light}}(-) + \mathbf{N}(\langle \mathbf{w} \rangle(\mathbf{z}))$
 b. *After the transfer:* $\text{fare}_{\text{light}}(\langle \mathbf{w} \rangle, (\mathbf{z})) + \mathbf{N}(\langle \mathbf{w} \rangle(\mathbf{z}))$

Further support for argument decomposition will come from the study of complex predicates involving nominalizations based on ergative verbs, whose ergativity is not preserved under thematic transfer. The analysis of passive by-phrases will also be examined, and shown to be enhanced by the distinction between a-variables and thematic indexes.

The layout of the paper is as follows: §2 lays the premises for the following analyses, motivating in detail the complex thematic structure assigned to the nominalizations under consideration. §3 addresses light verb selection and thematic transfer, while §4 covers the transfer of suppressed arguments and the related resurrection. A similar argument follows in §5, which explains loss of ergativity under thematic transfer. In §6, I examine how argument decomposition affects the analysis of by-phrases, and then conclude in §7 with some reflections on the order governing index transfer, on light verb selection with argumentless and ditransitive complements, and on the crosslinguistic consequences of the analysis.

2. The Argument Structure of Italian Verb-based Nominalizations in *-ata*.

The thematic analysis of nominalizations-based complex predicates presupposes an analysis of the argument-structure of the nominalizations themselves. This section assesses it in detail. The hurried reader may read up to the derivation in (11) below and then jump to the following section.

Italian nominalizations in *-ata* are derived from the past participle of the underlying verbal base, which is then turned into a feminine noun. This latter gender specification is responsible for the final feminine suffix *-a* (Herczeg 1972, Scalise 1984, 1994, Samek-Lodovici 1997); the derivation is schematized in (9) below:

- (9) Verbal base: V
 V Past-participle: [V + suffix_{Past Part}]
 Past-participle *ata*-nominalization: [[V + suffix_{Past Part}] +a]_N

The output of the derivation is a noun denoting an instance of the event or action referred to by the original verb base. Some examples follow below involving a transitive, an intransitive, and an ergative verb belonging to different inflectional classes. Note that despite their name, *ata*-nominalizations do not necessarily end in *-ata*.

- | (10) | <u>Stem and
Thematic Vowel:</u> | <u>Past
Participle:</u> | <u><i>ata</i>-Nominalization:</u> |
|-----------------------------|-------------------------------------|-----------------------------|-----------------------------------|
| lavare:
<i>to wash</i> | lav-a | lav-at | lav-at-a
<i>a washing</i> |
| dormire:
<i>to sleep</i> | dorm-i | dorm-it | dorm-it-a
<i>a sleep</i> |
| cadere:
<i>to fall</i> | cad-e | cad-ut | cad-ut-a
<i>a fall</i> |

Following Grimshaw's analysis of verb-based nominalizations (1990), I will maintain that *ata*-nominalizations inherit the argument structure of their verbal base, suppress the external argument (where available), and insert a new referential event-argument at the top of the inherited argument structure.

Suppression is expressed through angle bracket. The index of the inserted event argument is spelled out *ev* to remind that unlike the other indexes it relates to LCS variables or constants denoting events. As shown in (11) below, the argument structure for the *ata*-nominalization of a transitive verb like *lavare* (to wash) has the referential event role at its top referring to the event of washing, then the suppressed original agent of the verb, and finally the original theme of the verb.

- (11) V:lavare (x_i (y_k)) N:lavata (z_{ev} ($\langle x \rangle_i$ (y_k)))
 to wash a washing

The presence of the event-referring external argument z_{ev} is confirmed by the fact that an adjective preceding the nominalization always modifies the event that this denotes, and never the original external argument of the verbal base, nor any other argument. Under Higginbotham's (1985) account of adjectival modification, the external argument of the adjective is coindexed with that of the nominalization. If the adjective modifies the event denoted by the nominalization, then the event must be the external role of the nominalization.

For example, in (12) below, the adjective *endless* describes the duration of the *washing* event, not the agent of the *washing*. This event role is not part of the original verbal base, therefore it must be added to the original argument structure of the verb when the nominalization is formed. A similar reasoning applies to all other examples provided in this section.

- (12) L'interminabile lavata di camicie
 The endless washing of shirts
 The endless shirt-washing

As for the suppression of the external argument of the verbal base, I follow Grimshaw's diagnostics, which ties suppressed status to lack of obligatory realization in the event-oriented interpretation of the nominalization. This diagnostics applies straightforwardly to *ata*-nominalizations. Hence in example (13) below, the suppressed agent of *lavare* (to wash) is expressed only optionally as an adjunct of the corresponding *ata*-nominalization *lavata*, and it is realized through the PP-phrase *da parte di Gianni* (by John). The prenominal adjective *interminabile* (endless) guarantees the event-related interpretation of the nominalization, which denotes a single never ending washing of shirts.

- (13) L'interminabile lavata di camicie (da parte di Gianni)
 The endless washing of shirts (by part of John)
 The endless shirt-washing by John

Unsuppressed arguments retain their obligatory nature. For example, the unsuppressed theme y_k shown in the nominalization's argument structure in (11) above must be obligatorily realized. As expected, lack of realization yields ungrammaticality, as shown in (14) below.

- (14) *L'interminabile lavata (da parte di Gianni)
 The endless washing (by part of John)
The endless washing by John

It is worth mentioning that the by-phrases of Italian nominals can also be introduced by the preposition *di* (of), as in the example below. This has no effect on their optional status. However, unlike *da parte di*, the preposition *di* may also introduce the theme of a noun or a noun-modifying adjunct, and is thus ambiguous. I will therefore stick to the unambiguous *da parte di* throughout the paper.

- (15) La frequente lavata di camicie (di Gianni)
 The frequent washing of shirts (of John)
The frequent shirt-washing by John

The fact that by-phrases introduced by '*da parte di*' are licensed by the suppressed external argument of the verbal base is also shown by their distribution. As the following examples show, only *ata*-nominalizations based on transitive and intransitive verbs allow for a by-phrase expressing the suppressed argument.

- (16) a. Transitive bases:
- L'interminabile lavata di camicie da parte di Gianni
 The endless washing of shirts by part of John
The endless shirt-wash by John
 - L'improvvisa telefonata a Marco da parte di Gianni
 The sudden phone-calling to Mark by part of John
The sudden phone call to Mark by John
 - L'improvvisa bastonata al mulo da parte di Gianni
 The sudden sticking to-the mule by part of John
The sudden beating of the mule by John
- b. Intransitive bases:
- L'improvvisa risata da parte di Gianni
 The sudden laughing by part of John
The sudden laugh by John
 - La lunga camminata fino al mare da parte di Gianni
 The long walking until to-the sea by part of John
The long walk to the seaside by John
 - La faticosa remata controcorrente da parte di Gianni
 The tiresome rowing against-stream by part of John
The tiresome row upstream by John

When the verbal base of *ata*-nominalizations lacks an external argument —as is the case with ergative verbs— no argument is suppressed, and therefore the corresponding nominalizations are unable to license a *by*-phrase, as shown below.

(17) Ergative bases: argument introduced by *da parte di*

- ??L'interminabile caduta da parte dei paracadutisti
The endless falling by part of the paratroopers
The endless fall by the paratroopers
- ??La silenziosa entrata in casa da parte dei ladri
The silent entering in-the house by part of-the thieves
The silent entrance in the house by the thieves
- ??L'improvvisa calata a valle da parte degli orsi
The sudden descending into the valley by part of-the bears
The sudden descent downhill by the bears

Further support for the licensing of '*da parte di*'-phrases by suppressed external arguments follows from the observation that the above expressions become grammatical when the argument is introduced by *di*, as shown in (18) below. This is expected, because the theme of the ergative verbal base is preserved unsuppressed by the nominalization, and, as mentioned above, the theme argument of a noun is always introduced by *di* (a more detailed discussion of the argument structure of *ata*-nominalizations with ergative bases will follow in §5).

(18) Ergative bases : argument introduced by *di*

- L'interminabile caduta dei paracadutisti
The endless falling of-the paratroopers
The endless fall of the paratroopers
- La silenziosa entrata in casa dei ladri
The silent entering in house of-the thieves
The silent entrance in the house of the thieves
- L'improvvisa calata a valle degli orsi
The sudden descending into valley of-the bears
The sudden descent downhill of the bears

In conclusion, *ata*-nominalizations inherit the argument structure of their verbal base, suppress the external argument (where available), and add an event referring external argument at the top of their argument structure.

3. Light Verb Selection and Thematic Transfer

With the argument structure of *ata*-nominalizations in place, we may examine what operations are involved in the formation of the corresponding complex predicates. The crucial observation here is that the light verbs *fare* and *dare* appear to preserve the argumental adicity of their non-light counterparts but not the interpretation, which is governed by their nominal complement. This shows that the availability of arguments must be represented independently from their interpretation. The split between *a*-variables and thematic indexes makes this possible: light verbs are formed by the argument structure of their non-light counterparts by erasing the index responsible for the interpretation of the original arguments. The *a*-variables and the original argumental adicity are thus preserved, but not the interpretation, which is imported from the nominalization complement through index transfer.

3.1 The Argument Structure of *fare* and *dare* Non-light Counterparts

In their non-light form, *fare* (to do, to make) and *dare* (to give) differ in the number of arguments. As shown in (19a) below, the verb *dare* has three arguments, and denotes an event where w_k is donated by u_i to v_j ; some examples follow below.

- (19) a. $\text{dare} (u_i (v_j (w_k)))$
 to give
- b. Gianni ha dato un disegno a Marco
 John has given a drawing to Mark
- c. Gianni ha dato le chiavi al figlio
 John has given the keys to his son

The verb *fare*, on the other hand, allows for only two arguments, and denotes an event where an agent u_i physically constructs or creates an entity v_k . Therefore in (20b) below John creates a sand castle which was not there prior to John's activity. As expected, *fare* cannot take an indirect argument introduced by the preposition *a*, which in Italian is the default for the indirect argument of ditransitives; see (20c) below.

- (20) a. fare (u_i (v_j))
to do, to make
- b. Gianni ha fatto un castello di sabbia
John has made a sand castle
- c. ??Gianni ha fatto un castello di sabbia ai bambini
John has made a sand castle to the children

As (21a) below shows, a benefactive for *fare* may be expressed through the preposition *per* (for). This prepositional phrase is not selected by *fare*. It instead constitutes a fully productive way to express benefactive adjuncts and may occur with almost any verb. Example (21b) shows it with *dare*.

- (21) a. Gianni ha fatto un castello di sabbia per i bambini
John has made a sand castle for the children
- b. Gianni ha dato dei giochi a Marco per i bambini
John has given some toys to Mark for the children

The non argumental status of the expression headed by *per* is supported by the contrast in (22) below. Whereas in (22a) the object of *fare* can be extracted across a *wh*-phrase, the same is not true in (22b) for the benefactive *wh*-phrase headed by *per*, because its non-argumental status forces antecedent government of its trace, which is here prevented by the intervening *wh*-phrase of the lower clause (Rizzi 1990).

- (22) a. Cosa non sai se Gianni ha già fatto?
What (you) not know whether John has already made?
What don't you know whether John has already made?
- b. *Per chi non sai se Gianni ha fatto il castello?
For whom (you) not know whether John has made the castle?
For whom don't you know whether John made the castle?

Wrapping up, the argument structures of non-light *fare* and *dare* differ in the number of arguments, *fare* showing two and *dare* showing three arguments, as repeated below.

- (23) a. fare (u_i (v_j))
to do, to make.
- b. dare (u_i (v_j (w_k)))
to give

3.2 Light-verb Formation as Index Erasure

When combined with *ata*-nominalizations, *fare* and *dare* form a complex predicate, inheriting, from a descriptive point of view, the interpretation of their complement.

Consider the examples in (24) below with *fare*, where the complex predicate construction is preceded by the intransitive verbal base of the *ata*-nominalization. In all these cases, *fare* no longer entails the coming into existence of some entity which characterizes its non-light counterpart. Moreover, the external argument of *fare* has the same interpretation of the external argument of the nominalization base, making the complex predicate nothing more than a synonym of the original verbal base of the nominalization.

(24) <u>Complex predicate:</u>	<u>Verbal base of the nominalization:</u>
a. <i>fare una camminata</i> to do a walk <i>to walk</i>	<i>camminare</i> <i>to walk</i>
b. <i>fare una risata</i> to do a laugh <i>to laugh</i>	<i>ridere</i> <i>to laugh</i>
c. <i>fare una scricchiolata</i> to do a creak <i>to creak</i>	<i>scricchiolare</i> <i>to creak</i>

The distinction between the light and non-light forms of *fare* is particularly clear in the following minimal pair. The *ata*-nominalization *passeggiata*, which is derived from the intransitive verb *passeggiare* (to promenade) is in fact ambiguous between the noun denoting a promenade, and the event of promenading. The first meaning allows for a non-light interpretation of *fare*, as in (25a) below. The sentence in parentheses helps disambiguating, because it requires a physical object. Here John physically constructs a promenade. There is no entailment that John will walk through the promenade himself. The external argument of *fare* is interpreted independently from the lexicalized nominalization. In contrast, under the event interpretation shown in (25b), no reference is made to a specific promenade, but the external argument of *fare* is obligatorily interpreted as the external argument of the nominalization's verbal base *passeggiare* (to promenade, to walk), entailing that John walked for two hours.

- (25) a. Gianni ha fatto una passeggiata (che ha poi regalato allo Stato)
 John has done a promenade (that has later donated to-the State)
John built a promenade that he later donated to the State
- b. Gianni ha fatto una passeggiata (che è durata due ore)
 John has done a walk (that is lasted two hours)
John made a walk that lasted two hours

The same thematic transfer from the argument structure of the nominalization base to the light verb is observed in the following expressions involving *dare*, which is the light verb of choice when the base of the nominalization is a transitive verb. Here too, the external argument and the indirect argument of the light verb are respectively interpreted as the external argument and the theme of the transitive base of the nominalization. As in the previous case, the original meaning of the non-light counterpart of *dare* is lost —no one of the examples below entail a transfer of possession— and the complex predicate as a whole constitutes a synonym of the original base of the nominalization.

(26) <u>Complex predicate:</u>	<u>Verbal base of the nominalization:</u>
a. dare una strizzata ai panni to give a squeeze to-the cloths <i>to squeeze the cloths</i>	strizzare i panni <i>to squeeze the cloths</i>
b. dare una lucidata agli stivali to give a polish to-the boots <i>to polish the boots</i>	lucidare gli stivali <i>to polish the boots</i>
c. dare una accordata alla chitarra to give a tuning to-the guitar <i>to tune the guitar up</i>	accordare la chitarra <i>to tune the guitar up</i>

Even though they lose their original interpretation, the light-verb forms of *fare* and *dare* must be able to preserve their original argumental adicity. As (27a) and (27b) below show, each nominalization selects precisely the light verb that matches its own argumental adicity. The nominalizations based on intransitive verbs, totaling two arguments, select the biargumental *fare* and cannot occur with *dare*, whereas the nominalizations based on transitive verbs, totaling three arguments, select the triargumental *dare* and can occur with *fare* only when the theme is left untransferred, as we will see later on. The criterion determining the occurrence of *fare* or *dare* is thus

whether the original argument structure of the light verb matches the number of arguments of the nominalizations.

(27) a. Nominalizations selecting $fare_{non-light} (u_f (v_g))$

<u>Verb base</u> :	<u>Nomin. and argument structure:</u>	
camminare <i>to walk</i>	camminata <i>a walking</i>	($z_{ev} (<x>_i)$)
ridere <i>to laugh</i>	risata <i>a laughing</i>	($z_{ev} (<x>_i)$)
scricchiolare <i>to creak</i>	scricchiolata <i>a creaking</i>	($z_{ev} (<x>_i)$)

b. Nominalizations selecting $dare_{non-light} (u_f (v_g (w_h)))$

strizzare <i>to squeeze</i>	strizzata <i>a squeezing</i>	($z_{ev} (<x>_i (y_k))$)
lucidare <i>to polish</i>	lucidata <i>a polishing</i>	($z_{ev} (<x>_i (y_k))$)
accordare <i>to tune up</i>	accordata <i>a tuning</i>	($z_{ev} (<x>_i (y_k))$)

Any model of light-verb formation compatible with this class of complex predicates must thus meet the two properties below:

- (28) a. Allow for enough semantic bleaching of the original argument structure in order to predict the loss of intrinsic semantic content undergone by *fare* and *dare* as they are turned into light verbs,
- b. Allow for sufficient preservation of the original argument structure to retain the original argumental adicity, as is necessary to explain light verb selection.

Argument decomposition into a-variables and indexes makes it possible to meet both conditions through a single operation, namely index erasure. Erasing the indexes to the LCS-variables effectively disconnects the a-variables of the verb from their original meaning. I will assume that *fare* and *dare* are the verbs with the simplest LCS in their class. They are thus the predicates that have the least to lose from index erasure, and are therefore chosen as the best target for light verb formation (cf. Ritter

& Rosen's 1993 derivation of the multiple meanings of *have*, Grimshaw's analysis of *do-support* 1993, 1997:388, Rothstein's 1995 analysis of expletive pronouns, and Butt's 1995 derivation of Urdu light verbs via semantic bleaching).

Index erasure leaves the a-variables unscathed. As a result, the verb's original semantics is lost —i.e. we got the *light* version of the verb— but the original argumental adicity is preserved, as shown in (29) below.

- (29) a. $\text{fare}_{\text{non-light}} (u_i (v_j))$ *index erasure* $\text{fare}_{\text{light}} (u (v))$
 b. $\text{dare}_{\text{non-light}} (u_i (v_j (w_k)))$ *index erasure* $\text{dare}_{\text{light}} (u (v (w$
)))

Note that if arguments were undecomposable units, there would be no straightforward way to satisfy both requirements in (28) above at once. Retaining the arguments would entail retaining their connection to the LCS-variables responsible for the interpretation of the non-light version of the verb, while deleting the arguments would set the argumental adicity to zero, making *fare* and *dare* indistinguishable.

3.3 Thematic transfer through Index Transfer

The split between variables and indexes also explains how the a-variables of the newly formed light verbs acquire their semantics, providing, simultaneously, a simple account of how the light verb is selected by the nominalization. In order to be interpretable, the a-variables of the light verb need in fact an indexation to an LCS, and they can acquire one by importing the thematic indexes of the a-variables of the nominalization complement.

Bi-argumental nominalizations based on intransitive verbs necessarily select *fare*, because they cannot transfer more than two indexes. For example, in (30a), the light form of *fare* and the nominalization *camminata* (a walking) form the complex predicate *fare una camminata* (to walk) by transferring the event index ev from the the event-argument z_{ev} of the nominalization to the lowest a-variable v of *fare*, and the index i of the external argument x_i of the nominalization's verbal base to the highest a-variable u of *fare*². Once so indexed, the external argument of *fare* is no longer distinguishable from the original external argument of the nominalization's

² The order followed by index transfer is examined in detail in §7.1. As we will see there, the transfer of the event index can be reanalyzed in terms of standard verb-complement thematic assignment. Thematic transfer thus concerns only the internal arguments of the nominalization and preserves prominence: the indexes associated to the more prominent a-variables of the nominalization are mapped onto the more prominent variables of the light verb.

base *camminare* (to walk). Both are indexed to the same variable in the same LCS, and therefore they are interpreted in the same way.

(30) Perfect match with *fare*

Before: $\text{fare}_{\text{light}} (\mathbf{u} (v)) + \text{camminata} (z_{\text{ev}} (<x>_i))$

After: $\text{fare}_{\text{light}} (u_i (v_{\text{ev}})) + \text{camminata} (z_{\text{ev}} (<x>_i))$

Using *dare* rather than *fare* with this nominalization creates an ungrammatical structure. One of the three a-variables retained by *dare* is necessarily left unindexed, because there are only two indexes to transfer, and as we saw in the introduction, unindexed a-variables are uninterpretable. The resulting uninterpretable argument structure is shown in the following example, where the unindexed variable occurs in bold.

(31) Too many a-variables with *dare*

Before: $\text{dare}_{\text{light}} (\mathbf{u} (v (w))) + \text{camminata} (z_{\text{ev}} (<x>_i))$

After: $*\text{dare}_{\text{light}} (\mathbf{u} (v_i (w_{\text{ev}}))) + \text{camminata} (z_{\text{ev}} (<x>_i))$

Likewise, a nominalization based on a transitive verb, such as *strizzata* (a squeezing) can transfer all its arguments only if it selects as light verb *dare*, as in (32), because selecting *fare* does not provide a sufficient number of target a-variables, as shown in (33). The variable with the untransferred index is shown in bold.

(32) Perfect match with *dare*

Before: $\text{dare}_{\text{light}} (\mathbf{u} (v (w))) + \text{strizzata} (z_{\text{ev}} (<x>_i (y_k)))$

After: $\text{dare}_{\text{light}} (u_i (v_k (w_{\text{ev}}))) + \text{strizzata} (z_{\text{ev}} (<x>_i (y_k)))$

(33) Too many transferring indexes with *fare*

Before: $\text{fare}_{\text{light}} (\mathbf{u} (v)) + \text{strizzata} (z_{\text{ev}} (<x>_i (y_k)))$

After: $\text{fare}_{\text{light}} (u_i (v_{\text{ev}})) + \text{strizzata} (z_{\text{ev}} (<x>_i (y_k)))$

The selection of the light verb depends on whether the number of transferred indexes matches the original adicity of the light verb. Such a selection could not occur if *fare* and *dare* were completely detached from their original argument structure, because in this case *fare* and *dare* would be indistinguishable. Likewise, if thematic transfer replaced the argument structure of the light verb with that of the lower complement, the original adicity of the light verb would be irrelevant, and light verb selection should not be able to occur. The interaction between light verb formation via index erasure and thematic transfer via index transfer is thus essential to the kind

of light verb selection observed in the class of complex predicates under consideration.

As an exercise, let us consider a model where the a-variables are not retained. In this case, which light verb is selected by each nominalization would have to be encoded in the lexical entry of its verbal base. A first reason to reject this hypothesis is of course that the match between the original argumental adicity of the light verb and that of the nominalization becomes a coincidence. Furthermore, a nominalization should always occur with the same light verb, since the chosen light verb is encoded once and for all in the lexical entry of its verbal base. If both light verbs are selected, it should be possible to replace one with the other with no visible effect on the overall complex predicate construction. This prediction is directly confuted by the behavior of transitive nominalizations, which occur with either *fare* or *dare* again depending on how many arguments they transfer³.

Consider for example the case of *lavata* (a washing). As (34a) shows, when the theme of the underlying verb *lavare* (to wash) is realized within the noun phrase headed by the nominalization, it is introduced by the preposition *di* (of), which is standard for the complements of nouns. In this case *dare* is ungrammatical, as shown in (34b). The analysis is given in (35a) and (35b). The theme y_k of the nominalization is realized locally, leaving only two indexes to transfer, namely ev and i . This is compatible with *fare*, which has only two indexless a-variables, as shown in (35a). The light verb *dare* presents an additional variable in need of an index, shown in (35b) in bold. This a-variable cannot be left indexless, since this makes it uninterpretable, but transferring any of the other indexes onto it violates the theta criterion, because all indexes are already associated to some syntactically realizable a-variable.

- (34) a. *fare una gran lavata di camicie* b. **dare una gran lavata di camicie*
to do a great washing of shirts to give a great washing of shirts
to wash lots of shirts

- (35) a. *fare*. Before: $fare_{light} (u (v)) + lavata (z_{ev} (<x>_i (y_k)))$
After: $fare_{light} (u_i (v_{ev})) + lavata (z_{ev} (<x>_i (y_k)))$
- b. *dare*: Before: $dare_{light} (u (v (w)) + lavata (z_{ev} (<x>_i (y_k)))$
After: $dare_{light} (u (v_i (w_{ev})) + lavata (z_{ev} (<x>_i (y_k)))$

When the theme is not realized within the noun-phrase of the nominalization, its index may transfer and the theme is then realized as the indirect argument of the

³ Incidentally, the alternation in (34)-(36) below also shows that index transfer is not obligatory for the original internal arguments of the nominalization verbal base. A similar point holds for Japanese *suru* constructions, see Grimshaw and Mester (1988).

Argumental suppression is thus assumed to be a property of argument structure, and not of the corresponding LCS. What is suppressed is an a-variable, not the corresponding LCS-variable coindexed with it.

Thematic transfer only affects thematic indexes and leaves a-variables behind. Therefore, it is unable to preserve suppressed status, because this property concerns a-variables alone, and they do not transfer. When the transferring index lands on the unsuppressed a-variable of the light verb, it forms an unsuppressed argument, as schematized in (41) below. Since the LCS-variable coindexed via the transferred index remains the same, the transfer gives the impression that the suppressed argument of the nominalization ‘resurrected’ to unsuppressed status.

- (41) Before: light verb (u (...)) + nominalization (... (<x>_i ...))
 After: light verb (u_i (...)) + nominalization (... (<x>_i ...))

The suppressed argument of the nominalization is thus predicted to get realized with full argumental status as the subject of the light verb, as indeed it is, as shown in (42a) and (42b) below.

- (42) a. Gianni ha fatto una camminata
 John has done a walking
John walked
- b. Gianni ha dato una strizzata ai panni
 John has given a squeezing to-the clothes
John squeezed the clothes

If arguments were undecomposable units, then a suppressed argument should preserve its suppressed status during the transfer, as in (43) below. The resulting representation incorrectly predicts the active forms in (42) above to be ungrammatical, because the imported suppressed external argument should be realized as a passive by-phrase rather than as a subject. A similarly incorrect prediction would hold if a-variables were allowed to transfer, since in this case the suppressed a-variable could itself transfer, and suppressed status could then be transferred with it from the lower predicate to the matrix light verb.

- (43) Before: light verb (... (...)) + nominalization (... (<x> ...))
 After: light verb (<x> (...)) + nominalization (... (<x> ...))

Notice that passivized complex predicates such as those in (44) below, where the original external argument of the nominalization base is expressed through a by-phrase, do not count as evidence for the transfer of suppressed arguments, because they simply follow from the passivization of the active complex predicate in (42) above⁴.

(44) a. *La camminata fu fatta (da Gianni)*

The walking was done by John

The walk was performed by John

b. *La strizzata fu data ai panni (da Gianni)*

The squeezing to-the clothes was given by John

The squeeze to the clothes was given by John

The suppressed external argument that licenses the by-phrase is not imported directly from the nominalization. Rather, it follows from the passivization of the active form of the light verb, as shown in (45) and (46) below. Passivization suppresses the external argument of the light verb, yielding precisely the thematic structures responsible for the passive expressions seen above.

- (45) (i) Initial state: $\text{fare}_{\text{light}} (u (...)) + \text{camminata} (z_{\text{ev}} (<x>_i))$
 (ii) Thematic transfer: $\text{fare}_{\text{light}} (u_i (...)) + \text{camminata} (z_{\text{ev}} (<x>_i))$
 (iii) Passivization: $\text{fare}_{\text{light}} (<u>_i (...)) + \text{camminata} (z_{\text{ev}} (<x>_i))$

- (46) (i) Initial state: $\text{dare}_{\text{light}} (u (...)) + \text{strizzata} (z_{\text{ev}} (<x>_i (y_k)))$
 (ii) Thematic transfer: $\text{dare}_{\text{light}} (u_i (...)) + \text{strizzata} (z_{\text{ev}} (<x>_i (y_k)))$
 (iii) Passivization: $\text{dare}_{\text{light}} (<u>_i (...)) + \text{strizzata} (z_{\text{ev}} (<x>_i (y_k)))$

Summing up, the reversal from suppressed to unsuppressed status via thematic transfer is predicted impossible if what is transferred is whole arguments or a-variables, whereas it follows straightforwardly if thematic transfer occurs via index-transfer and thematic suppression by a-variable suppression.

5. Ergative Nominalizations and Loss of Ergativity via Thematic Transfer

The above argument rests on the presence of a suppressed argument in the nominalization. This crucial premise is further strengthened in this section through a detailed analysis of nominalizations based on ergative verbs (henceforth called

⁴ Since this is the passive of a verb, the by-phrase must be introduced by the canonical preposition for verbal passives *da* (by). The expression *da parte di* may introduce only the by-phrases of a nominal.

”ergative nominalizations”). As we will see, these lack a suppressed argument, and this difference in argument structure with respect to the nominalizations examined so far leads to closely related differences in the syntactic properties of the corresponding complex predicates.

5.1 The Representation of Ergative Nominalizations

Consider once again the thematic structure of transitive and intransitive nominalizations, with their suppressed a-variable.

(47) Intransitive:	V:camminare (x_i) <i>to walk</i>	N: camminata ($z_{ev} (<x>_i)$) <i>a walking</i>
Transitive:	V:lavare ($x_i (y_k)$) <i>to wash</i>	N: lavata ($z_{ev} (<x>_i (y_k))$) <i>a washing</i>

The thematic structure of ergative nominalizations must differ from both, because the ergative verbal base has no external argument to suppress. However, in order to derive the representation of ergative nominalizations, we must first determine the representation of ergative verbs themselves.

All that matters for my purposes is that ergative verbs lack an external role to suppress. I will therefore follow Grimshaw (1990) and represent the argument structure of ergative verbs as involving a doubled bracketed argument, as in (48) below. The idea behind it is that the top position of the argument structure—which in Grimshaw’s system turns out to be the only possible position for an external argument—is left empty. Keeping the representation of Grimshaw (1990) has the advantage that all her results straightforwardly apply also to the refined argument structure proposed in this work.

(48) Adopted representation of ergatives:	V: cadere ((y_i)) <i>to fall</i>
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A conceivable alternative representation would fill the top position of the argument structure through an unindexed a-variable, as in (49) below.

(49) Rejected representation:	V: cadere (x (y_i))
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Under the assumptions followed here, however, the unindexed a-variable would be uninterpretable. Nor could an index be provided, since the a-variable would then constitute a full argument and the argument structure would become that of a transitive verb.

di (by part of), which like the *by*-phrases of passives require licensing by a suppressed external argument.

A second effect concerns object cliticization. As Burzio (1986) showed, direct objects may be cliticized as *ne*. This requires that the cliticized item be an unsuppressed argument. The suppressed argument of unergative nominalizations thus cannot cliticize as *ne*, even if it no longer qualifies as external. In contrast, the unsuppressed argument of ergative nominalizations can cliticize as *ne*, much like the object of transitive unergative nominalizations.

The predicted empirical contrast is particularly evident in the case of the minimally different nominalizations of ergatives and intransitive unergatives. The first allows for *ne*-cliticization, as shown in (53a), the second disallows it, as shown in (53b)⁵. (The adjectival modifiers assure that we deal with the event-oriented meaning of the nominalization.)

- (53) a. Ergatives:
- Ne ho visto la lenta caduta
Of-them I saw the slow falling
I saw their slow fall
 - Ne ho visto l'improvvisa avanzata
Of-them I saw the sudden advancing
I saw their sudden advancing

⁵ Some additional ergative examples are: *durata* (duration, literally 'a lasting'), *comparsa* (appearance, literally 'an appearing'), *corsa* (a running), *entrata* (an entering). Other unergative examples are: *girata* (a turning), *chiacchierata* (a chatting), *litigata* (a quarrelling). The unergative nominalization *risata* (laugh) is an exception, apparently allowing for *ne*-cliticization, as shown in (1) below.

- (1) Ne ho visto l'improvvisa risata
of-them I saw the sudden laughing
I saw their sudden laughing

At closer inspection, however, the *ne* in (1) appears to be a simple possessive, much like that found in the examples in (2) below, which uses argument-less nouns which thus cannot license the argument-related clitic *ne* under examination in the main text.

- | | | |
|--------------------------|---------------------------|-----------------------------|
| (2) Ne ho visto i libri | Ne ho visto le città | Ne ho visto i bambini |
| of-them I saw the books | of-them I saw the cities | of-them I saw the children |
| <i>I saw their books</i> | <i>I saw their cities</i> | <i>I saw their children</i> |

Confirming the possessive nature of the *ne* in (1) above, *risata* is the only nominalization among those tested that can occur in a paraphrase involving the possessive verb *appartenere* (to belong) here interpreted as 'to be typical of', see (3) below. (Crucially, the noun *camminata* must be interpreted in its event reading, and not in its lexicalized meaning of *gait*)

- | | |
|---|---|
| (3) ^{ok} Quella interminabile risata apparteneva a Paolo | <i>That endless laugh belonged to Paolo</i> |
| * Quella camminata apparteneva a Paolo | <i>That walking belonged to Paolo</i> |
| * Quella dormita apparteneva a Paolo | <i>That sleeping belonged to Paolo</i> |
| * Quella cantata apparteneva a Paolo | <i>That singing belonged to Paolo</i> |

- **Ne ho visto l'uscita dal teatro**
Of-them I saw the exiting from-the theater
I saw their exit from the theater

b. Intransitive unergatives: - *Ne ho visto la breve camminata⁶

Of-them I saw the brief walking
I saw their brief walking

- ***Ne ho visto la lunga dormita**
Of-them I saw the long sleeping
I saw their long sleeping

- ***Ne ho sentito l'improvvisa cantata**
Of-them I heard the sudden singing
I heard their sudden singing

In unergative transitive nominalizations, *ne*-cliticization is available only when it does not refer to the suppressed original external argument. For example, the expressions in (54a) below are all grammatical because *ne* refers to the original direct object of the verb. However, those in (54b) are, as expected, ungrammatical, because *ne* refers to the suppressed original external argument of the underlying verb.

(54) a. *ne* refers to the original theme:

- **Delle camicie_i, ne_i ho visto la lunga lavata**
Of-the shirts, of-them I saw the long washing
I saw the long washing of the shirts
- **Delle scarpe_i, ne_i ho visto l'interminabile lucidata**
Of-the shoes, of-them I saw the endless polishing
I saw the endless polishing of the shoes

b. *ne* refers to the original agent:

- ***Dei ragazzi_i, ne_i ho visto la lavata di camicie**
Of-the boys, of-them I saw the washing of shirts
I saw the washing of the shirts by the boys
- ***Dei calzolai_i, ne_i ho visto la interminabile lucidata di scarpe**
Of-the shoemakers, of-them I saw the endless polishing of the shoes
I saw the endless polishing of the shoes by the shoemakers

⁶ The noun *camminata* must be interpreted in its event reading of *walk*, and not as a person's *gait*.

In conclusion, all the above alternations follow from the different argument structures posited for ergative and unergative nominalizations, confirming the suppression of the external argument of the verbal base in unergative nominalizations, and thus further supporting the index-transferring analysis provided in §4 for the "resurrection" of suppressed arguments under thematic transfer.

5.3 Apparent De-ergativization of Ergative Nominalizations

The thematic and syntactic properties distinguishing ergative and unergative nominalizations are neutralized in the corresponding complex predicates. In either case, these behave as unergative active predicates, allowing for passivization, and taking as auxiliary *avere* (to have), rather than the ergative-based *essere* (to be); compare (55) for the ergative case with (56) for the unergative case.

(55) Complex predicate based on ergative nominalizations:

- (i) Active takes *avere*: **Il nemico ha fatto una improvvisa avanzata**
 The enemy has done a sudden advancing
 The enemy suddenly advanced
- (ii) Passive is possible: **L'improvvisa avanzata é stata fatta dal nemico**
 The sudden advancing is been done by-the enemy
 The sudden advance was made by the enemy

(56) Complex predicate based on unergative nominalizations:

- (i) Active takes *avere*: **Gianni ha fatto una interminabile camminata**
 John has done an endless walking
 John has endlessly walked
- (ii) Passive is possible: **Una interminabile camminata é stata fatta da Gianni**
 An endless walking has been done by John
 An endless walk was made by John

As (57) and (58) show, the neutralization is due to index transfer. In both cases, the transferring index lands on the a-variable at the top of the argument structure contributed by the light verb.

(57) Ergative nominalization:

Before: $\text{fare}_{\text{light}} (u (v)) + \text{avanzata} (z_{\text{ev}} (x_i))$ After: $\text{fare}_{\text{light}} (u_i (v_{\text{ev}})) + \text{avanzata} (z_{\text{ev}} (x_i))$

(58) Unergative nominalization:

Before: $\text{fare}_{\text{light}} (u (v)) + \text{camminata} (z_{\text{ev}} (<x>_i))$ After: $\text{fare}_{\text{light}} (u_i (v_{\text{ev}})) + \text{camminata} (z_{\text{ev}} (<x>_i))$

The thematic-structure acquired by the light verb is structurally identical in both cases, and corresponds to that of an active unergative verb, explaining the identical syntactic behavior in both cases. The de-ergativization of ergative-based complex predicates thus follows from the analysis of thematic transfer in terms of index transfer alone.

6. By-phrases

All above arguments crucially rely on restricting thematic suppression to a-variables alone while not affecting indexes. Further support for this claim comes from the analyses of passive by-phrases.

As Grimshaw (1990) notices, by-phrases are not arguments, because they are never obligatory whereas authentic arguments are, and also because they are syntactically projected as adjuncts, as shown by a significant set of syntactic tests, such as wh-extraction, anaphoric references, and modification by the sentential adverb *widely* (see also Zubizarreta 1985, 1987).

Unlike pure adjuncts, however, by-phrases directly relate to argument structure and to suppressed external arguments in particular. As Grimshaw (1990) notices, this is clearly shown by their distribution, which is restricted to passives and nominalizations. They in fact cannot cooccur with the unsuppressed external role of a verb in the active form, as shown in (59), and they are ungrammatical with verbs lacking an external argument altogether, as shown in (60). These and other properties led Grimshaw to conclude that by-phrases require licensing by a suppressed external argument.

(59) $\text{destroy} (x_i (y_k))$ *The enemy destroyed the city by the army.

(60) Ergatives: *fall* ((x_k)) The trees fell (*by the woodcutters)
 Inchoatives: *break* ((x_k)) The glass broke (*by the child)
 middles: *read* ((x_k)) These books read well (*by children)

Although Grimshaw's analysis of by-phrases correctly accounts for their distribution, the lack of a split between a-variable and indexes forces her to represent suppression as affecting the whole argument, as shown in (61) below.

- (61) Active: $destroy_{active} (x (y))$ LCS: CAUSE(x (NOT(EXIST (y))))
 Passive: $destroy_{passive} (x-\emptyset (y))$ LCS: CAUSE(x (NOT (EXIST y)))

The problem with this representation is that it provides an additional way a syntactic phrase can be licensed by an argument structure. Licensing by suppressed external arguments must in fact be independent from licensing by unsuppressed arguments, because otherwise it would also inherit the associated properties, such as syntactic obligatoriness, which it does not.

The decomposition of arguments into a-variables and thematic indexes dissolves this problem. As we already saw, passivization only suppresses the a-variable, as in (62) below, but leaves the thematic index unaffected.

- (62) Active: $destroy_{active} (x_i (y_k))$ LCS: CAUSE(X_i (NOT(EXIST Y_k)))
 Passive: $destroy_{passive} (<x>_i (y_k))$ LCS: CAUSE(X_i (NOT(EXIST Y_k)))

Since the index has not been suppressed, it still relates the LCS-variable to the suppressed a-variable, explaining the alternation between by-phrases and the subjects licensed by the unsuppressed form of the external argument in active constructions. However, since the a-variable is suppressed, the corresponding coindexed LCS variable loses its argumental status, thus being no longer obligatory and getting syntactically realized as any other non-argumental semantic participant directly related to an LCS-variable.

Support for this analysis comes from Grimshaw's observation that semantic participants involved in an LCS but not directly related to the arguments of an argument structure can be related to a head across a copula, whereas those related to an argument cannot (Grimshaw 1990, chap. 3). This behavior is also confirmed by the Italian data, which allow for cross copular modifiers in (63a), but disallow cross copular arguments, as in (63b).

- (63) a. La lavata di camicie fu di giorno / fu in giardino / fu molto rapida
 The washing of shirts was by day / was in the garden / was very fast
The shirt-washing occurred by day / in the garden / was fast
- b. * La lavata fu di camicie
 The washing was of shirts
- c. * La lavata di camicie fu da parte di Gianni
 The washing of shirts was by part of John

Crucially, by-phrases pattern with arguments, as shown in (63c) and thus according to Grimshaw's analysis must relate to an argument. Under the analysis proposed here, this is expected, since they directly relate to the suppressed a-variable through the unsuppressed index. All relevant properties of by-phrases thus follow for free, with no need to add an independent licensing device in the model.

7. Additional Issues

The proposed argument decomposition opens a number of issues of which I will treat here the following two:

- (i) the order in which thematic transfer occurs,
- (ii) the complex predicates formed by nominalizations with more or with less arguments than those available in *fare* and *dare*.

I will then conclude with some thoughts on the crosslinguistic validity of argumental decomposition.

7.1 Order of Index-Transfer

There are two questions relative to the order of thematic transfer: the first concerns what indexes may transfer, and the second what a-variables of the light verb they transfer to.

As for the first question, the order follows Grimshaw's (1990) and Grimshaw and Mester's (1988) generalization that transfer respects the prominence relations encoded in the argument structure, thus transferring embedded indexes only if higher indexes have already been transferred.

This is particularly evident in the case of *lavata* (a washing), whose argument structure is repeated here below.

(64) N: lavata (z_{ev} ($\langle x \rangle_i$ (y_k)))

We have already seen in §3.3 that it is possible to transfer just the top two indexes, or all three. As the following example shows, however, it is impossible to transfer the lowest indexes without transferring the intermediate one. The resulting expressions are ungrammatical whatever light verb is used and whatever word order is adopted, precisely as predicted by the generalization at issue. In (65), the intermediate suppressed argument $\langle x \rangle_i$ is realized locally through the by-phrase *da parte di Gianni*, and only the theme index i is transferred to the light verb. The resulting sentence is ungrammatical, whatever light verb is used and whatever preposition is used for the phrase projected by the theme, as shown in (65a). Changing the order of the constituents does not affect the ungrammatical status of the sentence, as shown in (65b). Equally ungrammatical is the sentence realizing the theme as subject of the complex verb, see (65c).

- (65) $\text{fare}_{\text{light}} (u_k (v_{\text{ev}})) + \text{lavata} (z_{\text{ev}} (\langle x \rangle_i (y_k)))$
- a. * Fare/dare una lavata di/alle camicie da parte di Gianni
To-do/to-give a washing of/to-the shirts by part of John
 - b. * Fare/dare una lavata da parte di Gianni di/alle camicie
To-do/to-give a washing by part of John of/to-the shirts
 - c. * Le camicie hanno fatto/dato una lavata da parte di Gianni
The shirts have done/given a washing by part of John

As for the landing order of the transferring indexes, its complexity is only apparent. Consider again the case for *dare una lavata* (to wash).

- (66) Index transfer: Before: $\text{dare}_{\text{light}} (u (v (w))) + \text{lavata} (z_{\text{ev}} (\langle x \rangle_i (y_k)))$
After: $\text{dare}_{\text{light}} (u_i (v_k (w_{\text{ev}}))) + \text{lavata} (z_{\text{ev}} (\langle x \rangle_i (y_k)))$
)))

Assume once again that thematic transfer is triggered by the need of a semantic identification for those a-variables of the light verb that cannot be interpreted in any other way. This is not the case for the lowest a-variable of the light verb, which in virtue of its position in the argument structure can be theta-assigned *syntactically* to the nominalization in complement position, thus ending up identified with the properly indexed event argument of the nominalization. This hypothesis explains why the top index of the nominalization z_{ev} always lands on the innermost a-variable of the light verb.

Under this account, genuine index-transfer does not apply to z_{ev} . It only affects the internal indexes of the nominalization. For example, (66) above would be reanalyzed as in (67) below, with index-transfer responsible only for the internal indexes i and k .

—thematic-assignment—

$$(67) \quad \text{dare}_{\text{light}} (u_i (v_k (w_{\text{ev}}))) \quad + \quad \text{lavata} (z_{\text{ev}} (<x>_i (y_k)))$$

~~—————index-transfer—————~~
~~—————index-transfer—————~~

Once so simplified, index-transfer turns out to follow a simple generalization: the prominence of the transferring index is preserved. Higher indexes transfer onto higher a-variables, lower indexes onto lower ones (but see Butt 1998 and Neeleman 1994 for a different transfer-order in Urdu and Dutch).

7.2 Optimal vs. Perfect Light-Verb Selection

The second issue concerns what happens when the verbal base of the nominalization is a ditransitive or an argumentless verb. The argument structure of the corresponding nominalizations respectively present four and zero arguments, and therefore no perfect match with the argument structure of *fare* and *dare* is possible (Schepping, p.c.).

Here the empirical evidence suggests that rather than a perfect match, realizing a biunivocal mapping between the indexes of the nominalization and that of the light verb, complex predicates seek an optimal match, i.e. the best available match, suggesting an Optimality-Theoretic analysis (Prince & Smolensky 1993).

This conclusion is supported by the observation that nominalizations based on argumentless verbs such as *piovere* (to rain) and *nevicare* (to snow) select *fare*, as shown in (68) below, whereas nominalizations based on ditransitive verbs such as *indirizzare* (to direct something into some direction) select *dare*, as shown in (69).

- (68) a. Ha fatto/*dato una bella nevicata b. Ha fatto/*dato una bella piovuta
 Has done /given a beautiful snowing Has done/given a beautiful raining
It snowed a lot *It rained a lot*

- (69) a. Gianni ha finalmente dato al suo progetto un'indirizzata nel verso giusto
 John has finally given to-the his project a directing in-the direction right
John finally directed his project toward the right goal

- b. *Gianni ha finalmente fatto un'indirizzata del suo progetto nel verso giusto
 John has finally done a directing of-the his project in-the direction right
John finally directed his project toward the right goal

Consider for example the weather-verb case: the perfect match would require a verb with just one argument for the nominalization event role, as shown in (70a). Clearly, the light verb coming closest to such state between *fare* and *dare* is *fare*, independently of whether the unused a-variables are eventually eliminated or simply left uninterpreted; compare (70b) with (70c).

(70) Argument structure for weather-verb complex predicates after index transfer:

- a. perfect light-verb (u_{ev}) + nevicata (z_{ev})
- b. $fare_{light}$ (u (v_{ev})) + nevicata (z_{ev})
- c. $dare_{light}$ (u (v (w_{ev}))) + nevicata (z_{ev})

Similarly, in the ditransitive case, *dare* comes closest to the hypothetical perfect light verb for ditransitive nominalizations⁷.

(71) Argument structure for ditransitive complex predicates after index transfer:

- a. perfect light-verb (u_i (v_j (w_k (q_{ev})))) + indirizzata (z_{ev} ($\langle x \rangle_i$ (y_j (p_k)))))
- b. $dare_{light}$ (u_i (v_j (w_{ev}))) + indirizzata (z_{ev} ($\langle x \rangle_i$ (y_j (p_k)))))
- c. $fare_{light}$ (u_i (v_{ev})) + indirizzata (z_{ev} ($\langle x \rangle_i$ (y_j (p_k)))))

Selecting the optimal rather than the perfect light verb would of course still derive all the perfect-match cases examined in the previous sections.

7.3 Crosslinguistic Validity

A much more complex task is to assess the cross-linguistic validity of the proposal, i.e. its explicative potential for those complex predicate constructions whose behavior deviates from that of the Italian complex predicates described in this work. One example is the Japanese *suru* construction (Grimshaw and Mester 1988), which keeps the light verb invariant independently of how many arguments are transferred. A second class includes those complex predicates from Urdu, Dutch and Italian apparently involving the semantic fusion of two arguments, one from the argument structure of the light verb and one from that of the complement predicate (Rosen 1989, Neeleman 1994, Butt 1995, 1998).

The analysis defended in this work suggests that the scope of cross-linguistic variation should be restricted to the operations affecting thematic indexes or a-variables. Different languages could differ in the strength of semantic bleaching:

⁷ The fact that transitive nominalizations like *lavata* (washing) may occur with both *fare* and *dare* would suggest that both light verbs could be available for ditransitives too. The impossibility of *fare* shows that some other factor is at play, sensitive to the number or kind of arguments that remain to be realized local to the nominalization.

Japanese would form the light verb version of *suru* (to do) by bleaching away its entire argument structure, making the distinction between verbs with a different number of a-variables irrelevant. Italian bleaches away only thematic indexes, with the effects described in this work. Urdu would allow the argument of its light verbs to keep some of their semantic import (i.e. their indexes), which can then be fused together with the indexed imported from the light verb's complement..

Thematic transfer could then be seen as "filling in" the vacuum opened up by semantic bleaching: since this vacuum varies in different languages, thematic transfer will vary correspondingly. For example, since the argument structure of the light verb *suru* is totally empty, Japanese must allow transfer of full arguments from the lower predicate, thus affecting the adicity of the light verb, as observed by Grimshaw and Mester (1988). In Italian the light verbs already provide the a-variable skeleton, and thematic transfer is thus restricted to indexes alone. In Urdu, the a-variables of the light verb preserve their indexation: thematic transfer is thus restricted to indexes as in Italian, but in addition these may cooccur with those preserved by the light verb, yielding multi-indexed a-variables, providing the impression of argument fusion.

In all languages, semantic bleaching and thematic transfer interact with each other, and the various degrees of a-variable bleaching and index transfer identify the kind of cross-linguistic variation to be expected.

8. Conclusions

The Italian nominalization-based complex predicates examined in this work clearly point toward a decomposition of arguments into a-variables and thematic indexes, where a-variables encode argumenthood, and the indexes associate such properties to LCS-variables while providing a-variables with semantic import.

The decomposition makes it possible to affect the two components of arguments separately, predicting precisely the kind of phenomena examined in the previous sections, such as (i) argumental adicity preservation in Italian light verbs through index erasure, (ii) complex predicate thematic transfer through index transfer, (iii) resurrection of suppressed arguments via index transfer, (iv) de-ergativization of ergative nominalizations through index transfer, (v) the LCS-related but non-argumental nature of by-phrases due to the suppression of a-variables but not of their indexes.

The main observation underlying most of the above phenomena is that the argument structure of the complex predicates inherits its argumental adicity from the light verb but its semantic valences from the nominalization. This observation cannot be derived if arguments are represented as undecomposable units. Preserving argumental adicity would in fact entail also preserving the semantic import associated to the arguments, and transferring arguments would entail incrementing the adicity

of the target light verb. Both predictions are refuted by the class of complex predicates examined in this work, where exactly the opposite behavior occurs. The paradigm however follows naturally if argument are decomposed into a-variables and thematic indexes, with light-verb bleaching indexes away, thematic transfer affecting only indexes, and suppression affecting only a-variables.

9. References

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