Lexical decomposition, POSS≈LOC, and the dative alternation

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1. Introduction: Lexical decomposition and the requirement of coherence

Sets of similar lexical items such as {*dead, die, kill*} show that these items have increasing complexity. *Dead* is a simple stative predicate, while both *die* and *kill* are transition predicates entailing the result of being dead. Their argument structure differs: *die* has only one argument (the undergoer), while *kill* has an additional actor argument. In view of these similarities and differences, the following representations are reasonable:

(1) Semantic Form (SF)

a. statives:	*dead*:	λy λt		DEAD(y)	(t)
b. inchoatives:	*die*:	λy λe	BECOME	DEAD(y)	(e)
c. causatives:	*kill*:	λy λx λe {ACT(x) &	BECOME	DEAD(y)}	(e)

- BECOME is the transition operator. Roughly: BECOME(p) is true at a time interval t at whose initial bound ¬p holds and at whose final bound p holds (Dowty 1979:140).
- ACT(x) is an activity predicate. Roughly: ACT(x) is true in e if there is some subevent of e which is instigated and controlled by x.

The particular relationship between ACT(x) and BEC(p) does not need to be expressed in SF.

- '&' is considered to be asymmetric ([ACT(x) [& BECOME(p)]), thus, '&' is possibly stronger than logical 'and'.
- Verbs denote a coherent event (or situation). COHERENCE: A lexical SF conjunction is contemporaneously or causally interpreted. Since ACT denotes an activity extended in time, and BECOME denotes a transition, their relationship must be causal. Thus, {ACT(x) & BECOME(p)} is true at e iff both ACT(x) and BECOME(p) occur in e [possibly at different subevents, which do not have to concern us] and BECOME(p) would not have occurred if ACT(x) had not occurred (the counterfactual condition due to Lewis 1973). In other words, BECOME(p) (and hence, also p) specifies some result of ACT(x).

Generative Semantics of the early seventies (Morgan 1969, Lakoff 1970, McCawley 1971) proposed lexical items to be decomposed by means of syntactic paraphrasing; they thereby ignored the condition of coherence.

(2) a. (*Last week,*) Sally persuaded Ted to bomb the Treasury building.

b. What Sally did (*on Monday*) caused Ted to get the intention (*on Friday*) to bomb the Treasure Building.

Such an account must fail, as has been shown by Fodor and others. (2b) is logically weaker than (2a): there are cases where (2b) is true and (2a) is false. Consider the case in which Sally argued with Ted on Monday, but he did not decide to carry out the bombing before Friday. In this case, both 'Sally persuaded Ted on Monday' and 'Sally persuaded Ted on Friday' are false. Syntactic paraphrasing allows each of the involved subevents to be specified separately, which results in *two* events rather than *one* coherent event. A complex lexical item always requires the reading of a coherent event, which can be specified by a temporal expression only once. Therefore, lexical decomposition must be semantic rather than syntactic. (Wunderlich 1997, 200, 2001)

2. Lexical alternation, both cross-linguistically and intra-linguistically, can be captured by lexical decomposition.

The lexical decomposition account is advantageous in many respects.

- Cross-linguistically, it explains why languages, differing in their vocabulary, nevertheless express the same states of affairs. While some languages specify additional meaning (such as causative, (3)) or argument reduction (such as passive, (4)) by explicit operations, other languages only express the effects in the argument structure.

(3) Causative alternation

a. often with inchoative (non-agentive) verbs:
The stick broke.
John broke the stick.

b. rare with agentive verbs:
The horse galloped..
John galloped the horse. ('Hans ließ das Pferd galoppieren.')

(4) Basque lacks the verb 'to die', and it can do without an explicit passive or reflexive:
Itziar hil da. (Itziar kill be.3; lit. 'Itziar is killed')

(i) middle reading: 'Itziar has died.'
λy λe { ... BEC DEAD(y)}(e) [ACT(x) becomes irrelevant]

(ii) passive reading: 'Itziar has been killed.'
λy λe ∃x {ACT(x) & BEC DEAD(y)}(e)

(iii) reflexive reading 'Itziar killed herself.'
λx λe {ACT(x) & BEC DEAD(x)}(e)

- Intra-linguistically, the lexical decomposition account predicts the argument realization for several kinds of alternations by assuming additional lexical predicates: (5), (6), (7).

(5) Resultative alternation

a. The guests drank all of the wine.	DRINK(x,y)
b. The guests drank the wine cellar empty.	... & BEC EMPTY(z)
c. Die Gäste tranken ***mir*** den Weinkeller leer.	... ... & POSS(u,z)

(6) Wipe alternation

a. Marga wiped the crumbs from the table.	WIPE(x,y)
b. Marga wiped the table.	... & LOC(y,AT z)
c. Marga wiped the table clean.	... ... & BEC CLEAN(z)

(7) Locative alternation

a. The peasant loaded the hay on the wagon.	LOAD(x,y) &
b. The peasant loaded the wagon with hay.	... & BEC LOC(y,AT z)

The strongest evidence for lexical decomposition comes from examples in which the role of a recipient alternates with that of a goal, leading to different argument realizations. A recipient (the primary object in a double object construction) is described by means of BEC POSS, while a goal (a prepositional object) is described by means of BEC LOC. (Krifka 2001)

(8) 'Dative' alternation

a. Oscar sent **the publisher** his manuscript. (Double Object, DO)
b. Oscar sent his manuscript to **the publisher**. (Prepositional Object, PO)

To see the relevance of this distinction, we have first to look at POSS and LOC.

3. The two basic predicates POSS AND LOC

Cross-linguistically, POSS and LOC are the most important 2-place stative predicates. LOC, if expressed by local prepositions, has an inherent structure that allows for spatial variation.

(9) Local prepositions denote a relation between an object and *some* spatial region related to another object (indicated by '*').
The book is on the table/ under the table/ in the library.
LOC(*the book*, ON* *the table*)
UNDER* *the table*
IN* *the library*

(10) Japanese: The local preposition *ni* takes a region noun.

Hon	wa	teeburu	no	ue	ni	aru.
				shita		
		tosho-kan		naka		
book	TOP	table	GEN	on-region	LOC	be
				under-region		
		library		in-region		

lit. 'The book is located in the on-region of the table.' etc.

POSS and LOC-AT are at least weakly equivalent. It is generally the case that a possessed thing is available to the possessor. If I am riding a bike, I am the possessor for a while, and of course, this bike is near to me. If any bike is near to me, I can use it and thus make myself to the possessor. Usually, possession is regarded to be temporally more stable than local neighbourhood. However, there is a reading of possession in which POSS and LOC-AT can be regarded as even strongly equivalent: $\forall y \forall z$ POSS(y,z) $\Leftrightarrow$ LOC(z,AT y).

The main difference concerns the reversal of argument ranking, and, resulting from it, the options for discourse prominence. The higher argument (the subject) tends to be the topic, while the lower argument (the object) tends to be focus.

(11)

I have a bike.	The bike is mine.	?The bike is at me.
Ich habe ein Fahrrad.	Das Fahrrad ist mir.(dialectal)	?Das Fahrrad ist bei mir.

The locative construction is slightly odd in English, as well as in German.

(12)

There is another (lexically marked) verb, competing with *haben* 'have':		
I have a bike.	The bike belongs me.	
Ich habe ein Fahrrad.	Das Fahrrad gehört mir.	λz λy λt POSS(y,z)(t)
		NOM DAT

(13)

In general, however, the POSS ≈ LOC alternation is possible:	
The house has three bathrooms.	There are three bathrooms in the house.
Das Haus hat drei Bäder.	In dem Haus sind drei Bäder.

Many languages express even simple possession by means of a locative preposition.

(14) Russian:

a. U menja kniga.	b. U nego bylo mnogo druzej.
at me.GEN book	at him.GEN was many friends.GEN
'I have the book.'	'He had many friends.'

Therefore, POSS(y,z) and LOC(z,AT y) can be assumed to be equivalent options, although they lead to different surface realizations.

4. Paleosibiric Nivkh lacks the POSS option altogether

(All examples are taken from Mattissen 2003.)

'Have' verbs are realized by a locative construction.

(15) ñ-uin hə-bitɣə q'au-d.
1sg-LOC that-book not_exist-INDIC
'I do not have that book.'
¬LOC(***that book***, AT ***me***)

Locative arguments of intransitive verbs can be incorporated into the verb.

(16) p'-rəu-oʁla **parta**-ñv-d.
REFL-teach-child desk-sit(down)-INDIC
'the pupil sits at a **desk**.'
λx λe {SIT(x) & LOC(x, AT ***desk***)}(e)

Only the lowest argument can be incorporated into the verb. With ditransitive verbs, it is always the recipient (construed as goal) which gets incorporated.

(17) a. əmək karandas **p'-oʁla**-k'im-d.
mother pencil REFL-child-give-INDIC
'The mother gave a pencil to **her child**.'
λy λx λe {ACT(x) & BEC LOC(y, AT ***her child***)}(e)

b. ñi to hə-**ñivx**-ar-d.
1sg fish that-person-feed-INDIC
'I am feeding fish to **him/her**.'
λy λx λe {FEED(x) & BEC LOC(y, AT ***him/her***)}(e)

c. ñi seta **ŋir**-t'i-d.
1sg sugar dish-put-INDIC
'I put the sugar into the **cup**.'

d. ma **t'om**-hupu-d.
dried_fish fat-dip-INDIC
'I dipped dried fish into **fat**.'

By contrast, I know of no language that lacks the LOC construction. Thus, Double Object (DO) seems to be the more marked construction in a grammar. However, in order to emerge, such a construction must be unmarked under other aspects. As will be shown in section 7, DO gets preference under *less* marked circumstances. Generally, the disposal of an alternative construction is costly, which must be counter-balanced by particularly low costs under special circumstances.

5. Regularities found in the formation of denominal verbs constitute a major argument for lexical decomposition.

Denominal verbs are derived from an abstract verbal template into which a noun is incorporated. With predicative nouns, denominal verbs are possible with copula, inchoative and causative readings:

(18) Verbs with copula reading :
Hans liebte zu *gärtnern.*
'John liked to be a gardener.' (i.e., to behave temporarily like a gardener)
λx λt ***GARDENER***(x)(t)

(19) Vers with inchoative reading:
Das Holzwerk splitterte.
The woodwork splintered. λx λe BEC ***SPLINTER***(x)(e)

(20) Verbs with causative reading:
Hans bündelte die Stöcke.
John bundled the sticks.
'John made the sticks to be in a bundle.' λy λx λe {ACT(x) & BEC ***BUNDLE***(y)}(e)

The incorporated noun always occupies the lowest position of the verbal template.

The incorporated noun can also saturate an individual argument, which gets existentially bound. Two major types of this class are location and locatum verbs.

(21) Location verbs:
a. Hans kellerte den Wein.
John cellared the wine. = 'John made the wine to be located in a cellar.'
λy λx λe ∃z {ACT(x) & BEC LOC(y, IN* z) & ***CELLAR***(Z)}(e)

b. Hans schulterte das Bündel.
John shouldered the bundle.
λy λx λe ∃z {ACT(x) & BEC LOC(y, ON* z) & ***SHOULDER***(Z)}(e)

(22) Locatum verbs:
a. Hans zäumte das Pferd.
John bridled the horse. = 'John made the horse to have a bridle.'
λy λx λe ∃z {ACT(x) & BEC POSS(y,z) & ***BRIDLE***(Z)}(e)

b. Hans schuppte den Fisch.
John scaled the fish.
λy λx λe ∃z {ACT(x) & BEC ¬POSS(y,z) & ***SCALE***(Z)}(e)

Lexical decomposition gives rise to semantic templates, formed from general predicates. These templates can be used productively in the formation of new verbs, such as denominal verbs. Which template is chosen, depends on conceptual information of the noun, as well as on information about the stereotypical use of the nominal referent. Consider this variation:

(23) a. John match-boxed. (He made match-boxes)
b. John match-boxed the pips. (He put the pips into a match-box)
c. John match-boxed the pips into the paper-bag.
(He put the pips into the paper-bag by using a match-box)

6. Two types of ditransitive verbs

Typical change of possession verbs: *give, lend, buy*

(24) a. Anna gave Max a book. The recipient 'Max' is an argument of the verb *give*.
b. Anna bought Max a book.
c. *give*: λz λy λx λe {ACT(x) & BEC POSS(y,z)}(e)
buy: λz λy λx λe {BUY(x,z) & BEC POSS(y,z)}(e)

Typical change of location verbs: *throw, put, dip, splash, glue*

(25) a. He threw the book behind the tree.
The goal 'tree' is an argument of the preposition *behind*.
The directional PP is an argument of the verb *throw*. ('indirect linkage')
b. *throw*: λP λy λx λe {THROW(x,y) & P(y)}(e)
behind the tree: λu (BEC) LOC(u, BEHIND* ***the tree***)
throw behind the tree: λy λx λe {THROW(x,y) & BEC LOC(y, BEH* ***the tree***)}(e)

Locative alternation: The predicate LOC gets incorporated into the verb itself.

(26) a. Anna glued all the photos at the wall.
Anna klebte all die Photos an die Wand.
glue: λP λy λx λe {GLUE(x,y) & P(y)}(e)
b. Anna glued the whole wall with (the) photos.
Anna beklebte die ganze Wand mit (den) Photos.
glue: λz λx λe ∃y {GLUE(x,y) & BEC LOC(y,z)}(e)

Some verbs denote an event in which change of possession and change of location cooccur; these verbs have both options:

(27) a. Anna schickte dem Verleger die Photos.
Anna sent the.DAT publisher the.ACC photos
b. Anna schickte die Photos an den Verleger/ in die Bibliothek/auf den Speicher.
Anna sent the.ACC Photos at the publisher/ into the library/on the store.
'Anna sent the photos to the publisher/to the library/to the store' (only *to* !)

In English, the DO-PO alternation is found rather frequently, although some verbs seem to resist. The DO construction often is possible only with a pronominal receiver (28),(29). The PO construction behaves similarly with a pronominal theme (Bresnan & Nikitina 2003)

(28) Verbs of imparting of force
a. *Susan pushed John the box. (*push, pull, carry, lift, lower*)
b. Susan pushed the box to John.
c. Susan pushed **him** the chips.

(29) Verbs of communication
a. *Susan whispered Rachel the news. (*whisper, yell, mumble, mutter*)
b. Susan whispered the news to Rachel.
c. Susan whispered **me** the answer.

(30) Verbs of 'prevention of possession'
a. The car cost Beth $5000.
b. *The car cost $5.000 to Beth.
c. It would cost **nothing** to the government.

In the discussion of the dative alternation, the structural differences between 'goal' (an intended location) and 'recipient' (an intended possessor) have often been ignored.

7. The English 'dative' alternation (DO vs. PO) reconsidered.

In German, dative verbs compete with verbs that have a full PP argument (with LOC being external to the verb):

(31) a. Dat: λz λy λx λe {ACT(x) & BEC POSS(y, z)}(e)
ACC DAT AG REC TH

b. PP: λP λz λx λe {ACT(x,) & P(z)}(e)
PP AG TH

In English, the preposition is fixed; it is a formal reflex of LOC being incorporated in SF.

(32) Double object versus prepositional construction in English :

a. DO: λz λy λx λe {ACT(x) & BEC POSS(y, z)}(e)
secO primO AG REC TH

b. PO: λy λz λx λe {ACT(x) & BEC LOC(z, AT y)}(e)
prepO AG TH REC=GOAL

Generally, a prepositional object occupies the lowest position in SF.

These representations allow us to make the following predictions.

1. **Binding**: A quantifier in the higher argument can bind the possessor of a lower argum.

(33) DO construction: The Recipient binds the possessor of the Theme
a. He gave every woman$_i$ her$_i$ baby.
b. *He gave its$_i$ mother every baby$_i$.

(34) PO construction: The Theme binds the possessor of the Recipient=Goal
a. He gave every baby$_i$ to its$_i$ mother.
b. *He gave her$_i$ baby to every woman$_i$.

2. **Scope**: The higher arg. has scope over the lower arg. Scope reversal is a marked option.

(35) DO construction: The Theme is distributed to multiple Recipients.
a. Ozzy gave each girl a telescope.
∀y ∃z {ACT(*ozzy*) & BEC POSS(y,z)} (Bresnan & Nikitina 2003)
b. *Ozzy gave a (different) girl each telescope.
∀z ∃y {ACT(*ozzy*) & BEC POSS(y,z)}

(36) PO construction: The Recipient=Goal is distributed to multiple Themes.
a. Ozzy gave each telescope to a girl.
∀z ∃y {ACT(*ozzy*) & BEC LOC(z,AT y)}
b. ??Ozzy gave a (different) telescope to each girl.
∀y ∃z {ACT(*ozzy*) & BEC LOC(z,AT y)}

3. **Markedness** (harmonic alignment of scales): If there is a choice between two constructions, the choice is made such that the more marked argument occupies the lower position in argument-hierarchy.

(37) Differential object marking in ditransitive verbs

less marked	more marked
animate	inanimate
1st or 2nd person	3rd person
pronoun	full noun
definite	indefinite
short expression	long expression
topic	focus

(38) DO-PO competition:
a. If the Recipient is less marked than the Theme, DO is chosen (alternatively, PO is blocked).
b. If the Recipient is more marked than the Theme, PO is chosen (alternatively, DO is blocked).

This prediction turns out to be true. Collins (1995) calculated several factors determining the choice of construction on a broad text basis. He found the following distribution in the DO construction. (In the PO construction, the (reversed) preferences are less striking – around 1.5).

(39) Preferences in the DO construction (Collins 1995:47)

	Recipient	Theme
focus	1	90
topic	14	1
pronoun	11	1
definite	4.5	1
longer	1	3

These data show that DO is the marked construction, which leads to a sharper profile under varying circumstances. Bresnan & Nikitina (2003) present many more data in the same direction, but are still arguing for *one* underlying sem. repr. In contrast with this view, I argued for differences in the lexical decomposition: BEC POSS(y,z) vs. BEC LOC(z, at y).

These representations lead to the same conceptual inferences, simultaneously they allow us to predict the different behavior on the basis of a different argument hierarchy.

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