New Applications of Role and Reference Grammar: Diachrony, Grammaticalization, Romance Languages

Edited by

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Since Anderson (1971), locative alternation has been a puzzling problem in linguistic theory. In this paper, I will present a RRG account for locative alternation of transitive verbs:

(1) a. Max loaded the hay on the truck [Dir. Obj.: THEME ~ straight construction]
   b. Max loaded the truck with (the) hay [Dir. Obj.: LOCATION ~ inverted construction]

In (1a), the argument denoting a location is realized as an oblique and the argument denoting a moved entity (hence a prototypical THEME) as the direct object. In (1b), the syntactic functions of the two arguments are the other way round: the argument bearing the thematic relation LOCATION appears as direct object, the moved entity as an oblique. It is generally assumed that the first construction is «straight» and the second «inverted».

The first part of this paper will present some data from English, French, Italian and German, illustrating cases of locative alternation in one of these languages in comparison to the others. It has been pointed out in the literature that the straight and the inverted construction are not exactly synonymous. Semantic differences of the two constructions will be clarified.

In the second part, two alternative RRG accounts for locative alternation will be taken into consideration. First, a lexicalist approach indicating a semantic representation for each lexeme and construction - Logical Structure (LS) - that predicts the syntactic realization of the arguments will be considered. Second, a non-lexicalist approach that is more in line with previous treatment of locative alternation in RRG will be discussed (Foley / Van Valin 1984; Van Valin / LaPolla 1997; Van Valin 2001). This approach starts from a unique LS for both constructions and considers the inverted construction a case of marked linking. I will argue that the semantic particularities of the inverted construction are imposed by a special linking rule in RRG, the “marked-Undergoer-choice-rule”. In addition, I will delve into the details of the RRG linking machinery: it will be shown that marked Undergoer choice in transitive two-place constructions entails marked Actor choice, a phenomenon not attested to in previous RRG work.

2. Data

An exhaustive compilation of French transitive verbs of locative alternation can be found in Guillet / Leclère (1992). Guillet / Leclère list 39 verbs corresponding to the spray/load class in English (verbs of putting) and even more verbs corresponding to the drain/clear class (verbs of removal).

(2) a. Max a vidé l’eau
   Max have-3.SG.PRES empty-Ptc DEF.MASC.SG water
det de la bouteille
   from DEF.FEM.SG bottle
   (lit.: ‘Max emptied the water from the bottle’)

b. Max a vidé la bouteille
   Max have-3.SG.PRES empty-Ptc DEF.FEM.SG bottle
det de l’eau
   from DEF.FEM.SG water
   (lit.: ‘Max emptied the bottle of water’)

Verbs of removal seem to be rare, but not inexistent in English and Italian:
A RRG description of locative alternation verbs

(3) a. Gianni ha sgombrato
    John have-3.SG.PRES clear-PTC
    i mobili della stanza
    DEF.MASC.PL furniture-PL from+DEF.FEM.SG room
    (‘John cleared the furniture from the room’)

b. Gianni ha sgombrato la stanza
    John have-3.SG.PRES clear-PTC DEF.FEM.SGroom
dai / dei mobili
    of / from+DEF.MASC.PL furniture-PL
    (‘John cleared the room of the furniture’)

In general, the realization of the THEME argument seems to be blocked in the inverted construction, as illustrated for Italian:

(4) a. Gianni ha svuotato
    John have-3.SG.PRES empty-PTC
    l’acqua dalla bottiglia
    DEF.FEM.SG water from+DEF.FEM.SG bottle
    (lit.: ‘John emptied the water from the bottle’)

b. Gianni ha svuotato la bottiglia
    John have-3.SG.PRES empty-PTC DEF.FEM.SG bottle
    *dell’ / *dall’ acqua
    of+Pgn.PBtVt’sG water
    (lit.: ‘John emptied the bottle of the water’)

Locative Alternation in German is a complex phenomenon. As a general rule, the verb takes the affix be- in the inverted construction:

(5) a. Max pflanzt die Eichen
    Max plant-3.SG.PRES DEF.FEM.PL oak-PL.ACC
    in seinen Garten
    in 3.SG.MASC.POSS.SG.ACC garden-SG.ACC
    (lit.: ‘Max plants the oaks in his garden’)

b. Max bepflanzt / *pflanzt
    Max be-plant-3.SG.PRES

Be-affixation is excluded for füllen (‘fill’) and optional for sprühen, spritzen (‘spray’), streichen (‘spread’) and schmieren (‘smear’). Laden (‘load’) allows locative alternation without be-, if the LOCATION argument denotes a fire-arm:

(6) a. Max füllt Wasser
    Max fill-3.SG.PRES water-SG.ACC
    in das Glas
    in DEF.NEUTR.SG.ACC glass-SG.ACC
    (lit.: ‘Max fills water in the glass’)

b. Max füllt / *befüllt das Glas
    Max be-fill-3.SG.PRES DEF.NEUTR.SG.ACC glass-SG.ACC
    mit Wasser
    with water-SG.DAT
    (‘Max fills the glass with water’)

(7) a. Max lädt die Kisten
    Max load-3.SG.PRES DEF.FEM.PL box-PL.ACC
    auf den Laster
    on DEF.MASC.SG.ACC truck-SG.ACC
    (‘Max loads the boxes on the truck’)

b. Max belädt / *lädt den Laster
    Max be-load-3.SG.PRES DEF.MASC.SG.ACC truck-SG.ACC
    mit Kisten
    with box-PL.DAT
    (‘Max loads the truck with boxes’)

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c. Max lädt das Gewehr
Max load-3.sg.pres def.neutr.sg.acc gun-sg.acc
mit Schrot
with small shot-sg.dat
(‘Max loads the gun with small shot’)

(8) a. Max sprüht streicht
Max spray-3.sg.pres spread-3.sg.pres
rote Farbe
red-fem.sg.acc paint-sg.acc
auf die Tür
on def.fem.sg.acc door-sg.acc
(‘Max sprays / spreads red paint on the door’)

b. Max (be)sprüht (be)streicht
Max be-spray-3.sg.pres be-spread-3.sg.pres
die Tür
def.fem.sg.acc door-sg.acc
mit roter Farbe
with red-fem.sg.dat paint-sg.dat
(‘Max sprays / spreads the door with red paint’)

Table I: Synopsis of locative alternation for six verbs of putting and four verbs of removal in English, French, German and Italian (s: only straight; i: only inverted; r: reduced inverted construction)

<table>
<thead>
<tr>
<th>English</th>
<th>French</th>
<th>German</th>
<th>Italian</th>
</tr>
</thead>
<tbody>
<tr>
<td>load</td>
<td>charger</td>
<td>laden(s) / beladen(i)</td>
<td>caricare</td>
</tr>
<tr>
<td>spread; smear</td>
<td>étendre(s); enduire; tartiner</td>
<td>streichen / bestreichen(i); schmieren / beschmieren(i)</td>
<td>spalmare</td>
</tr>
<tr>
<td>spray</td>
<td>asperger</td>
<td>sprühen / besprühen(i); spritzen / bespritzen(i)</td>
<td>spruzzare</td>
</tr>
<tr>
<td>plant</td>
<td>planter</td>
<td>pflanzen(s) / bepflanzen(i)</td>
<td>piantare</td>
</tr>
<tr>
<td>fill(i)</td>
<td>remplir(i)</td>
<td>füllen</td>
<td>riempire(i)</td>
</tr>
<tr>
<td>strew</td>
<td>répandre(s); joncher(i)</td>
<td>streuen / bestreuen(i)</td>
<td>spargere</td>
</tr>
<tr>
<td>clear</td>
<td>débarrasser</td>
<td>räumen(r) / (frei)räumen(i)</td>
<td>sgombrare</td>
</tr>
<tr>
<td>empty(r)</td>
<td>vider</td>
<td>leeren(r)</td>
<td>svuotare(r)</td>
</tr>
<tr>
<td>sweep(r)</td>
<td>balayer</td>
<td>fegen(r)</td>
<td>spazzare(r)</td>
</tr>
<tr>
<td>evacuate(r)</td>
<td>évacuer</td>
<td>evakuieren(r)</td>
<td>evacuare(r)</td>
</tr>
</tbody>
</table>

According to Guillet / Leclère (1992), the distinction of verbs of putting and verbs of removal made on semantic grounds is corroborated by the fact that French verbs of putting generally allow a transitive two-place construction realizing the THEME as subject and the LOCATION as direct object:
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(9) a. Des fleurs jonchent le chemin
   PART.PL flower-PL strew-3.PL.PRES DEF.MASC.sg path
   ('Flowers cover the path')

b. De lourdes caisses chargent
   PART heavy-PL box-PL load-3.PL.PRES
   le camion (Guillet/Leclère 1992:139)
   DEF.MASC.sg truck
   (lit.: 'Heavy boxes load the truck')

c. Un rouge violent enduisait
   INDEF.MASC red violent smear-3.SG.IMPERF
   ses lèvres (FRANTEXT: DEON, M.)
   3.SG.Poss.PL lip-PL
   (lit.: 'A violent red smeared her lips')

d. Un jet d' essence aspergea
   INDEF.MASC jet of gas spray-3.SG.PAST
   les deux motards (FRANTEXT: PAGE, A.)
   DEF.MASC.PL two biker-PL
   (lit.: 'A jet of gas sprayed the two bikers')

(10) a. *De l'eau vide le verre
   PART DEF.FEM.SG water empty-3.SP.PRES DEF.MASC glas
   (lit.: 'Water empties the glass')

b. *Des miettes balayent la pièce
   PART.PL crump-PL sweep-3.PL.PRES DEF.FEM.SG room
   (lit.: 'Crumps sweep the room')

In German, but also in French and Italian, there is also a LOCATION subject two-place construction:

(11) a. Das ist der Laster,
    DEM be-3.SG.PRES DEF.MASC.SG.NOM truck-SG.NOM
    der meiner Kisten
    REL.MASC.SG.NOM 1.SG.Poss.FEM.PL.ACC box-PL.ACC
    geladen hat
    load-PTC have-3.SG.PRES
    (lit.: 'This is the truck that has loaded my boxes')

b. *Des miettes balayent la pièce
    PART.PL crump-PL sweep-3.PL.PRES DEF.FEM.SG.room
    (lit.: 'This is the truck that has loaded my boxes')

(12) C'est le camion qui a chargé mes caisses
    dem be-3.SG.PRES DEF.MASC.sg truck
    rel.Notr,t have-3.SG.PRES load-PTC 1.SG.Poss.PL box-PL
    (lit.: 'This is the truck that has loaded my boxes')

(13) Il camion ha caricato
    def.masc.sg truck have-3.SG.PRES load-PTC
    solo le travi (BR)
    only def.fem.pl beam-PL
    (lit.: 'The truck has loaded only the beams')

Hence, at least for French charger, we find locative alternation in a two-place construction.

3. Semantics

The semantics of the straight and the inverted construction are not equivalent. According to Anderson (1971), there is always a «holistic interpretation» of the direct object.

(14) a. Max loaded the hay on the truck
    b. Max loaded the truck with (the) hay

All of the hay is loaded on the truck when the THEME argument appears in the direct object position and the truck may or may not be full. When the LOCATION argument is realized as direct object, the truck is completely filled, without any implication whether all of the hay is loaded or not (cf. Van Valin 2002).

Following Krifka (1989), Dowty (1991:590) assumes that the definite direct object argument of these constructions is always interpreted as
INCREMENTAL THEME. Other authors claim that the direct object is affected undergoing a change of state (Rappaport Levin 1988:24-28; Pinker 1989) or measuring out the event (Tenny 1994:49-55; Arad 1996). These accounts refer in an explicit or implicit way to the concept of telicity. Although related, holistic interpretation, incrementality and telicity should not be mixed up.

Dowty (1991:567s) defines the proto-patient property "incremental theme" in terms of homomorphism and telicity. In a telic event such as John drank a glass of beer, there is a homomorphic mapping of "the subparts of this quantity of beer into subevents of drinking; but [...] none of these proper subevents is an event of drinking a glass of beer" (568). In an atelic event such as John drank beer the same homomorphic mapping can be observed, but every subevent is an instance of drinking beer, because there is no definite quantity of beer specified. Change of state arguments of achievements such as die, touch the finish line or recognize a face are not INCREMENTAL THEMES because changes do not take place in form of distinguishable separate stages. Dowty coins the term HOLISTIC THEME for entities that undergo a change of location without homomorphic mapping. If an event such as John drives from New York to Chicago is interrupted, it is not the case "that part of John has arrived in Chicago while the rest of him is still in New York" (569).

Ackerman / Moore (1999:7s), developing ideas of Križka (1998), distinguish two kinds of INCREMENTAL THEMES: CUMULATIVE INCREMENTAL THEMES corresponding to atelic events, and QUANTIZED INCREMENTAL THEMES corresponding to telic events. For example, «beer» is cumulative because each subpart of the substance itself has the property of being beer. On the contrary, «a glass of beer» is quantized because each subpart of the substance does not have the property of being beer.

The assumptions about incrementality and telicity do not apply straightforwardly to the classic cases of locative alternation. I will base my intuition on German examples, but I assume that the argumentation holds for the parallel English examples too (cf. Dowty 1991:591). If the direct object is a bare nominal, both constructions have to be interpreted as atelic events:

(15) a. Max hat eine Stunde lang / *in einer Stunde Heu auf Laster geladen
b. Max loaded hay on trucks for an hour / *in an hour
(16) a. Max hat eine Stunde lang / *in einer Stunde Farbe auf Autos gesprüht / gespritzt
b. Max sprayed paint on cars for an hour / *in an hour

According to Ackerman / Moore, the direct objects should be CUMULATIVE INCREMENTAL THEMES, but this can be confirmed only for the THEME direct object; the LOCATION direct object seems to be still quantized in a certain way. Although there is no definite number of trucks or cars specified, it can be inferred that each truck was completely loaded and each car completely sprayed before Max passed to the next one. At least in German, the inverted constructions can be modified with an adverb such as vollständig ("completely"), a modification that makes no sense for the straight constructions:

(19) Max hat eine Stunde lang Laster vollständig mit Heu beladen (lit.: Max completely loaded trucks with hay for an hour)
(20) *Max hat eine Stunde lang Heu / Kisten vollständig auf Laster geladen (lit.: Max completely loaded hay / boxes on trucks for an hour)

I conclude that the LOCATION argument as direct object is always an INCREMENTAL THEME. On the other hand, the THEME direct object is not always an INCREMENTAL THEME. At least for load, it can be a HOLISTIC THEME in Dowty's terms.

The semantics of German be-verbs are peculiar. In general, their location object can be interpreted as totally affected, but precisely this interpretation is excluded when the be-form coexists with an unmarked form that allows the inverted construction.

(21) Max belädt den Laster mit Heu (Max loads the truck with hay) => holistic interpretation
(22) a. Max spritzt / sprüht / streicht die Wand mit Farbe (Max sprays / spreads the wall with paint) => holistic interpretation
b. Max bespritzt / besprüht / ?bestreicht die Wand mit Farbe (Max be-sprays / be-spreads the wall with paint) => holistic interpretation excluded
I will close this section by having a look at the semantics of locative two-place constructions. French charger alternates THEME and LOCATION in the subject and direct object position. In English, fill allows a similar alternation, but for the location subject construction the THEME argument has to be marked with a preposition:

(23) a. Water filled the tank
    b. The tank filled with water (Dowty 1991:593)

Ackerman / Moore (2001) interpret these examples as an instance of the causative / inchoative alternation, but this is problematic at least for the French examples. As far as the location subject construction is concerned, inchoative fill clearly differs from stative charger ('load'): French remplir ('fill') bears the inchoative marker s(e), charger does not:

(24) a. La cuve s'est remplie
    b. C'est le camion qui a chargé mes caisses

(25) a. Les fleurs chargent les paniers
    b. Un rouge violent enduisait ses lèvres
    c. Un jet d'essence aspergea les deux motards

The effect is related to incrementality, although the LOCATION objects of transitive states cannot be considered INCREMENTAL THEMES: there is no homomorphic mapping between the occurrence of an event and the change of state of an object because the sentence denotes the result of such an event and the change is already completed. I will call these kinds of themes EXTENSIONAL THEMES:

(26) An extensional theme is a location argument that measures out a state of extension resulting from an event that affects a location as an incremental theme. The extensional theme of the resulting state and the incremental theme of the corresponding event denote the same location.

4. A RRG description of locative alternation

Two different ways to account for the semantic effects of locative alternation have been pointed out in the literature.
I: Different, but related semantic representations have been proposed by Rappaport / Levin 1988; Levin / Rappaport 1995; Pinker 1989; Groen et al. 1991; Baker 1997; Wunderlich 1997; Aranovich / Runner 2001.

II. An alternative to these lexical-entry-driven approaches consists in treating the semantic differences as an effect of syntax. It is the choice as direct object that determines the interpretation of the location argument. This approach has been defended by Borer (1994; 1998) and Arad (1996). Borer (1998:65) calls it a “syntactic predicate-based account” because the choice of a syntactic pattern is not determined by the lexical entry but by Aktionsart properties of the whole predicate. The semantic properties of the arguments that give rise to traditional lists of thematic roles are entirely determined by syntactic positions. Therefore, argument lists are assumed to be unordered (cf. Borer 1998:66). For example, the interpretation of which entity is the AGENT and which the PATIENT of a verb like eat depends entirely on the syntactic pattern (cf. Borer 1998:75):

(27) a. Kim ate the cake
    b. The cake ate Kim

The second sentence is marked as far as our world knowledge is concerned but can be easily interpreted when we assume a world in which cakes can eat people. But the two sentences cannot be interpreted as synonymous. Nonetheless, Borer’s approach is too radical. First, it does not explain the interpretation of transitive states:

(28) a. Kim has a pretty face
    b. A pretty face has Kim
(29) a. I liked what you did
    b. What you did liked me

If the b-sentences are interpretable at all, they might be synonymous with the a-sentences (an interpretation suggested by the existence of verbs like belong to or please).

Secondly, Aktionsart properties of a predicate are influenced by the inherent semantic properties of its arguments. For example, French frapper ("strike") changes from a telic verb of punctual physical impact caused by an agent to an atelic verb denoting a state of emotion. The psych-verb reading is triggered off by the inherent semantics of the subject argument. Abstract nouns or propositions cannot be interpreted as AGENTS. Therefore, the physical reading is excluded:

(30) a. Max m’a frappé
    Max 1.SG.OBL have-3.SP.PRES strike-PTC
    à la figure *pendant des semaines
    in DEF.FEM.SG face during PART.PL week-PL
    (lit: ‘Max struck me in the face for weeks’)

b. Le comportement de Max /
   DEF.MASC behavior of Max /
   ce que Max a dit
   DEM REL.ACC Max have-3.SG.PRES say-PTC
   m’a frappé
   1.SG.OBL have-3.SG.PRES strike-PTC
   pendant des semaines
   during PART.PL week-PL
   (lit.: ‘Max’s behavior / what Max said, struck me for weeks’)

RRG semantic representations [LS] code arguments as ordered lists. The ordering is due to the inherent semantic properties of the arguments.

In the second part of this section, I will start from identical LS giving a more formalized account of the modifications that determine the different interpretations of the straight and the inverted construction. But first, I will propose a lexicalist treatment of locative alternation. It will be shown that at least some relations, for example the relation between the three-place and the two-place constructions of French charger (‘load’) or German be-affixation should be treated at the lexical level.

4.1. A lexicalist RRG approach to locative alternation

According to the RRG formalism, the following LS has to be assumed for verbs of putting:

(31) [do’(x, a)] CAUSE [BECOME be-LOC’(y, z)]
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![Actor-Undergoer Hierarchy](image)

Figure 1: Actor-Undergoer Hierarchy (cf. Van Valin / LaPolla 1997: 127; 146)

The embedded do' predication (first argument of CAUSE) selects an EFFECTOR argument x, and an unspecified activity that could be specified by the component of meaning that distinguishes one verb from the others (do' (x, load'); do' (x, spray')). The embedded locative predication be-LOC'(y,z) (second argument of CAUSE) selects a LOCATION argument y and a THEME argument z. According to the RRG linking algorithm, the THEME argument should be linked to the direct object position. In RRG, argument linking is arranged by macrorole assignment. Transitive predicates take two macroroles: Actor and Undergoer. The macroroles are assigned according to the Actor-Undergoer Hierarchy (AUH) illustrated in Figure 1. In an accusative language, the Actor will always be linked to the subject position, the Undergoer of a transitive verb to the direct object position. Intransitive verbs of the LS do' (x,...) take only an Actor, intransitive verbs of the LS pred'(x,...) take only an Undergoer that will be linked to the subject position. For transitive three-place locative alternation verbs of the LS [do' (x, o)] CAUSE [BECOME be-LOC' (y, z)], the first argument of do' takes the Actor role, the second argument of the stative predication be-LOC' the Undergoer role.

The linking of the inverted construction follows straightforwardly from its LS if we represent the LOCATION argument as the single argument of stative predication. In Kailuweit (2001: 122), I propose the following LS for the inverted construction of French charger:

(32) [do' (x, do' (x, o)] CAUSE [BECOME be-LOC' (y, z))] CAUSE [BECOME full-of(z)' (y)]

This complex LS could be read: x does something causing, for example, hay (z) to end up in a truck (y) and this causes the truck (z) to become full of hay (y). Example (32) contains the simple LS embedded as the second argument of the leftmost do' predicate. It represents the additional semantic information associated with the inverted construction. The location argument of the predication embedded as the second argument of the leftmost do' is identical with the only argument of the state predicate embedded in the second argument of CAUSE of the matrix predication [do' (x,...)] CAUSE [BECOME full-of(z)' (y)]. At the matrix level, the THEME argument appears as incorporated in the stative predication full-of (z)'(y). Hence, there is no need to express it at all. In the location as direct object construction, the THEME argument can be realized as an adjunct.

But this formalization seems to be unnecessarily complicated. As activities [do' (x, pred'(x)) or pred'(x, y)], along with states [pred'(x)] or [pred'(x, y)], are the building blocks of the LS in RRG, their second argument [pred'(...)] should simply express the manner of activities. An alternative representation could be a causal chain as proposed by Van Valin / LaPolla (1997: 121) for instruments:

(33) Tom is cutting the bread with a knife

[do' (Tom, use'(Tom, knife))] CAUSE [[do' (knife, cut'(knife, bread))] CAUSE BECOME cut'(bread)]

The inverted construction of locative shift verbs of putting could be represented in an analogous way:

(34) [do' (x, o)] CAUSE [BECOME be-LOC' (y, z))] CAUSE [BECOME full-of(z)' (y)]

To ensure correct linking, macrorole assignment principles should be clarified in the following way:

(35) Macrorole Assignment Principles:

1. Vertical Principle: In a LS (pred',(pred'_2 ... (pred'_n)) advanced. 

Rappaport / Levin (1988: 26) proposed the following formalization for the inverted construction of load: [[x cause z to come to be in state]] BY MEANS OF [z cause to be at z]]. This structure too expresses the semantic difference of the inverted construction correctly. As a general rule, Rappaport / Levin (ibd.: 27) claimed that the “main clause of the decomposition” predicts the linking of the arguments. The disadvantage of this approach lies in its complicated syntax. Not only is embedding of predicates in argument positions allowed, but also subordination of adjuncts introduced by operators such as “by means of”.

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macrorole assignment is restricted to the level of the highest predication. Embedded arguments are not accessible for macrorole assignment.

2. Horizontal Principle: In a LS \( \text{pred}'_1 + \text{pred}'_2 \ldots + \text{pred}'_n \), the leftmost argument of the leftmost predicate is chosen for Actor and the rightmost argument of the rightmost predicate is chosen for Undergoer.

At the level of lexical entries, the two LS of locative alternation verbs should be related. Van Valin / LaPolla (1997: 117) propose the following general LS to relate the different constructions allowed by verbs of saying:

\[(36) \text{do}'(x, [\text{express.(a).to.}(\beta).\text{in.language.}(\gamma')(x, y)])\]

The three internal variables, \(a\), \(\beta\) and \(\gamma\), can be expressed by the \(y\) argument. The lexical entry of each verb specifies which internal variable is realized as the \(y\) argument and, therefore, receives the Undergoer macrorole and which variables might be realized as oblique core arguments:

\[(37) \text{speak}: y = a \ (a = \text{metalinguistic noun}); y = \gamma; \text{to PP} = \beta; \text{about PP} = a\]
\[\text{talk}: y = \gamma; \text{to PP} = \beta; \text{about PP} = a\]
\[\text{discuss}: y = a \ (a = \text{topic noun})\]

Locative alternation could be treated in a similar, but not identical way. Variables will not be used for different arguments, but for parts of the complex LS:

\[(38) a = [\beta = \text{do}'(x, o)] \text{CAUSE} \{\text{BECOME } (\gamma = \text{be-LOC'}(y, z))\} \text{CAUSE} \{\delta = \text{BECOME } (\varepsilon = \text{full-of}(z)'(y))\}\]

The variable \(a\) refers to the entire LS in (34). The variable \(\beta\) corresponds to the LS of the three-place straight construction \[\text{do}'(x, o) \text{CAUSE} \{\text{BECOME } \text{be-LOC'}(y, z)\}\] representing the first part of the causal chain. The variable \(\gamma\) represents the two-place straight construction \[\text{be-LOC'}(y, z)\], the variable \(\delta\) the accomplishment of the holistic effect \[\text{BECOME full-of}(z)'(y)\] and the variable \(\varepsilon\) the resulting state \[\text{full-of}(z)'(y)\].

The use of five variables, \(a\), \(\beta\), \(\gamma\), \(\delta\), and \(\varepsilon\) can be illustrated by the following lexical entries for some of the verbs listed in Table 1:

\[(39) \text{a. spread, streichen, spalmare}: a; \beta = \text{Classic} \text{locative alternation}\]
\[\text{b. caricare}: a; \beta; \gamma = \text{Classic} \text{locative alternation + two-place state with LOCATION subject}\]
\[\text{c. laden}: a \ (y = \text{fire-arm}); \beta; \gamma\]
\[\text{d. beladen}: a\]

The inverted construction of German laden ('load') is restricted to \(y = \text{fire-arm}\). German be-verbs must always be represented by separate entries. The entry of beladen ('be-load') can refer to the general LS, but entries of besprühen, bespritzen ('be-spray') or beschmieren ('be-smear') need to be represented by a different LS because for these be-verbs there is no holistic interpretation of the LOCATION direct object. It is beyond the scope of this paper to give a general account on German be-affixation (see: Wunderlich 1987; Brinkmann 1997; Nooman 2001; Michaelis / Ruppenhofer 2001). Be-affixation is not limited to transitive locative verbs. It affects about 500 hundred German verbs of different semantic fields, some of which are not even derived from a verb but from a noun (cf. Michaelis / Ruppenhofer / 2001: 5f).

The most complex variation has been attested for fill and French charger ('load'):

\[(40) \text{a. fill}: (x, y, z \text{ or } x = z, y); \delta; \varepsilon\]
\[\text{b. charger}: a; \beta (x, y, z \text{ or } x = z, y); y; \varepsilon\]

English fill allows a transitive and an intransitive two-place construction. Following Ackerman / Moore (2001), the transitive two-place construction is ambiguous between a resulting state reading \(\varepsilon\) and a causative accomplishment reading \(\beta\), for which the THEME argument is identical to the CAUSER argument \((z = x)\). In such a case, the Uniqueness Principle clarifies macrorole assignment:

\[(41) \text{Water fills the tank } = \text{causative accomplishment}\]
\[\beta (x=z): [\text{do}'(\text{water, o}) \text{CAUSE} \{\text{BECOME be-in'}(\text{tank, water})\}]\]

\[(42) \text{Uniqueness Principle for macrorole assignment:}\]
\[\text{If the same argument is represented several times in a LS, it will not take more than one macrorole.}\]
The δ subpart of the general LS predicts macrorole assignment straightforwardly in:

(43) The tank fills with water = inchoative
δ: BECOME full-of(z)'(y)

The LOCATION is the only argument of a one-place predication. It takes the Undergoer macrorole and is realized in the subject position of an intransitive construction. The internal THEME argument is realized as an adjunct.

In contrast, the subpart e = full-of(z)'(y) does not predict macrorole assignment straightforwardly for two-place transitive states with a THEME subject:

(44) a. Water fills the tank = stative
b. Les fleurs chargent les paniers
   (lit.: 'The flowers load the baskets')
c. Un rouge violent enduisait ses lèvres = stative
   smear-3.SG.IMPERF 3.SG.Poss.PL lip-PL
   (lit.: 'A violent red smeared her lips')

To ensure the correct macrorole assignment in these cases, the internal z argument has to be externalized. I propose the following rule:

(45) e rule: if e, then full-ofl(z, y)

This rule is not arbitrary because a similar relation can be found for intransitive adjective predicates and corresponding transitive state predicates:

(46) a. conscious-of(y)'(x) ⇔ know'(x, y)
b. eager-to(y)'(x) ⇔ want'(x, y)
c. fond-of(y)'(x) ⇔ like'(x, y)

Note that the cases are similar but not identical. For experiencer verbs, the internal argument of the one-place predicate corresponds to the second argument of pred'(x, y) of the two-place predicate. For locative verbs, the internal argument corresponds to the first argument of pred'(x, y). Another piece of evidence against the assumption of Borer (1994; 1998) and Arad (1996) that arguments do not form an ordered list according to their inherent semantics.

French charger allows five of the six different readings corresponding to the variables a, β (x, y, z or x = z, y), γ, δ and e.

(47) a. Max a chargé le foin
   Max have-3.SG.PRES load-PTC DEF.MASC.SG hay
   sur le camion
   on DEF.MASC.SG truck
   ('Max loaded the hay on the truck')
   β: [do' (Max, o)] CAUSE [BECOME be-loc' (camion, foin)]
   b. Max a chargé le camion
      Max have-3.SG.PRES load-PTC DEF.MASC.SG truck
      de foin
      of hay
      ('Max loaded the truck with hay')
      α: [do' (Max, o)] CAUSE [BECOME be-loc' (camion, foin)] CAUSE [BECOME full-of(foin)l (camion)]
   c. Les fleurs chargent
      DEF.PL flower-PL load-3.PL.PRES
      les paniers = eventive
      DEF.PL basket-PL
      β (x=z): [do' (fleurs, o)] CAUSE [BECOME be-loc' (paniers, fleurs)]
      (lit.: 'The flowers load the baskets')
   d. Les fleurs chargent les paniers = stative
      e (e rule applied): full-ofl(fleurs, paniers)
   e. Ce camion charge mes caisses
      DEM truck load-3.SG.PRES 1.SG.Poss.PL box-PL
A RRG description of locative alternation verbs

(lit.: ‘This truck loads my boxes’)
γ: be-LOC’(camion, mes caisses)

The general LS for verbs of removal is less complex:

(48) α = \{ do’ \(x, \emptyset\) \} CAUSE [BECOME NOT be-LOC’ \((y, z)\)]
CAUSE [BECOME empty’\(y\)]]

I do not assume an internal argument for empty’\(y\). For the inverted
construction of pop-verbs, the THEME cannot be freely added as an
adjunct. As illustrated for Italian svuotare (‘empty’) and German leeren
(‘empty’), an important part of these verbs show argument reduction α
\((x,y)\):

(49) a. svuotare, leeren: α \((x,y)\); β
b. clear, débarrasser, sgombrare: α; β

4.2. Locative alternation as marked Undergoer choice

In previous RRG descriptions, locative alternation has been treated as an
instance of marked Undergoer choice (cf. Foley / Van Valin 1984:57; Van
Valin / Lapolla 1997:336f; Nakamura 1997:63; Van Valin 2007). This
approach claims that the rightmost argument of the AUH (see Figure 1) is
only the default choice for Undergoer. Hence, it is possible for the y
argument of locative alternation verbs, i.e. the LOCATION argument, to be
selected as Undergoer.

In this section, I will try to formalize the marked Undergoer choice
approach for locative alternation verbs. Note that a lexicalist treatment
of locative alternation phenomena cannot be totally avoided in the case of
German be-affixation because of the varying semantics associated with
this phenomenon. The relation of three-place and two-place constructions
too has to be described at the lexical level. A simplified general structure
for verbs of putting illustrated by a few lexical entries may be sketched as
follows:

(50) α = \{ do’ \(x, \emptyset\) \} CAUSE [BECOME \(\beta = \text{be-LOC}'(y, z)\)]
(51) a. laden: α \((U = z \text{ or } y); \beta \)
 b. charger: α \((U = z \text{ or } y); \beta \((U = z \text{ or } y)\)

For the three-place inverted construction and the two-place THEME subject
resultative construction, the LOCATION being the first argument of the
stative predication be-LOC’\((y, z)\) is as an exception chosen as Undergoer.
French examples are repeated for convenience:

(52) a. Max a chargé le camion
Max have-3.SG.PRES load-PTC DEF.MASC truck
de foin
of hay
(‘Max loaded the truck with hay)
α: \{(do’ \(\text{Max}, \emptyset\) \} CAUSE [BECOME \(\beta = \text{be-LOC}'(\text{camion, foin})\)]; y = Undergoer
b. Les fleurs chargent
DEF.FEM.PL flower-PL load-3.PL.PRES
les paniers = statrve
DEF.MASC.PL basket-PL
(lit.: ‘The flowers load the baskets’)
β: \(\text{be-LOC}'(\text{camion, foin}); y = Undergoer

It has been illustrated that a holistic interpretation can be inferred for the
LOCATION argument of both constructions, while the LOCATION oblique of
the corresponding three-place construction and the LOCATION subject of
the corresponding two-place construction are not interpreted in a holistic
way. But why should marked Undergoer choice trigger holistic
interpretation?

Actor and Undergoer are categories of RRG that mediate between
semantics and syntax. Marked Undergoer choice is limited to transitive
constructions. A prototypical Undergoer of a transitive predicate is the one
represented by the rightmost argument position of the AUH (argument of
pred’\((x)\)). This can be illustrated by the LS of prototypical transitive verbs
like break, write a poem or drink a beer:

(53) a. Max broke the window
\{do’(Max, \emptyset) \} CAUSE [INGR broken’(window)]
b. Max wrote a poem
\{do’(Max, write’)\} & [BECOME exist’(poem)]
A prototypical Undergoer is an argument being causally affected, coming into existence and/or being an incremental theme. In contrast, the second argument of pred'(x, y) is not a prototypical Undergoer. Two-place state predicates often form transitive-intransitive pairs:

(54) a. owe [have'(x, y)] : belong (to) [have'(x, y)] 1MR
b. German mögen, French aimer (bien) [like'(x, y)]: German gefallen, French plaire [like'(x, y)] 1MR

The possibility of macrorole intransitive (1MR) constructions prove that the semantic contrast between the two arguments is quite small. This is not only due to the semantics of the first, but also to the semantics of the second argument. One could think that the small activity contrast between the two arguments of pred'(x, y) enables the x argument to be as an exception selected as Undergoer. But this would not give any explanation as to why such choices actually occur. Marked Undergoer choice seems to be arbitrary from a semantic point of view, but in fact it is not. My claim is the following: If an argument of a transitive predicate pred'(x, y) is as an exception chosen as Undergoer, it is interpreted by the semantics of a prototypical Undergoer.

(55) Semantic effect of marked Undergoer choice:
If an argument is a marked choice for Undergoer in a given LS, it is interpreted as a prototypical Undergoer, i.e. as having at least one of the properties «causally affected», «change of state», «incremental / extensional theme».

This is in line with Arad’s (1996) application of Borer’s (1994) approach treating locative alternation as an effect of an aspectual event measurer projection that assigns (additional) semantic information to its specifier. In RRG, syntactic functions are treated as language specific templates apart from the Privileged Syntactic Argument (PSA) function. Therefore, semantic effects associated with marked Undergoer choice could not be considered syntax-driven. As Borer (1994: 22f) points out, RRG allows a non-syntactic predicate approach, avoiding different lexical entries for semantic alternations such as locative alternation. On the other hand, Undergoer is an interface category mediating between semantics and morphosyntax. Besides being the choice for PSA in intransitive states and passive constructions, it is always realized as a direct core argument. Hence, there are also morphosyntactic properties associated with Undergoer.

The semantic effect of marked Undergoer choice is not limited to locative alternation. The effect could help to explain the interpretation of non-causative transitive object experiencer verbs like Italian interessare (‘interest’):

(56) a. Il film interessava solo
    DEF.MASC.SG film interest-3.SP.IMP only
    una piccola parte
    INDEF.FEM small-FEM.SG part
    degli spettatori (BR)
    of+DEF.MASC.PL spectator-PL
    (lit.: ‘The film interested only a small part of the audience’)
b. Sembra che quell’ uomo
    seem-3.sc.pRBS that DEM man
    le interessi (BR)
    3.sg.dat interest-3.sg.CONJ.pRES
    (lit.: ‘It seems that this man interests her’)

In (56b), the linking of the dative experiencer construction follows straightforwardly from macrorole intransitivity. In contrast, the EXPERIENCER is chosen for Undergoer in the transitive construction (56a). The accusative EXPERIENCER is perceived as more affected, although the transitivitiy contrast is weaker in comparison to causative object EXPERIENCER verbs of emotion as irritare (‘irritate’):

(57) irritare: [do' x, O OR pred'(x)] CAUSE [irritated-about(x)'(y)]

The contrast between causative object EXPERIENCER verbs of emotion and marked Undergoer EXPERIENCER verbs of emotion is due to the Actor
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argument. While the Actor of a causative predicate is a prototypical Actor, the Actor of a marked Undergoer predicate is not.

In transitive two-place constructions, marked Undergoer choice entails marked Actor choice, a phenomenon not accounted for in previous RRG descriptions. Nonetheless, to admit cases of marked Actor choice does not have any considerable theoretical consequences for the RRG framework. I claim that marked Actor choice is just an epiphenomenon of marked Undergoer choice. There seem to be no semantic effects of marked Actor choice. For two-place transitive locative verbs and verbs of emotion, the marked Actor is not interpreted as a prototypical Actor. This is another argument against the radical syntactic-predicate-based account of Borer (1994; 1998) and Arad (1996). The semantics of the arguments contribute to form an ordered list in the LS of a given predicate. By its inherent semantics, i.e. the color red in (58) is interpreted as the THEME argument of the two-place state-predicate enduire ('smear') and not as an AGENT of CAUSER of a two-place activity or causative accomplishment enduire:

(58) Un rouge violent
enduisait ses lèvres
(lit.: 'A violent red smeared her lips')

5. Conclusion

In this paper, it has been shown that locative alternation is more complex than generally assumed. Besides the well-known three-place constructions, there are also two-place constructions allowing locative alternation.

Two different ways to account for the phenomena in RRG have been presented: a lexicalist approach and the marked Undergoer choice approach. The two approaches are not exclusive: the relation of the three-place and the two-place constructions has to be described at the LS level. Nonetheless, assuming marked Undergoer choice is not only a more economical way of describing locative alternation, but it is also more adequate as far as semantics are concerned. The semantic effect of marked Undergoer choice is corroborated by the semantics of verbs of emotion.

List of abbreviations

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<tr>
<th>Abbreviation</th>
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References


