

The logical structure of verbs of quantized and non-quantized change

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1. Aims of the talk

- To discuss the contrast between quantized and non-quantized change and its implications for the RRG system of lexical decomposition.
- To propose an addition to the accomplishment representations proposed in Van Valin (2005:44, 2018), which should capture this contrast.

2. Quantized vs. non-quantized change

Verbs of quantized change lexicalize a specific final goal state, whereas verbs of non-quantized change only entail that a final state exists (Beavers 2013). For verbs of non-quantized change, see also Dowty's (1979: 88-90) *degree achievements* and Bertinetto & Squartini's (1995) *verbs of gradual completion*.

(A) The progressive of verbs of non-quantized change entails their perfect.

(1a) The soldier is dying \neq the soldier has died. [Quantized change]

(1b) The child is growing \Rightarrow the child has grown. [Non-quantized change]

(B) Verbs of non-quantized change are not only compatible with *in* temporal adverbials, but also with *for* temporal adverbials.

(2a) The soldier died *in*/**for* 5 minutes. [Quantized change]

(2b) The ice cream melted *in*/*for* an hour. [Non-quantized change]

(C) Verbs of non-quantized change are compatible with adverbials describing the degree of the change.

(3) Il soldato è invecchiato / *morto di parecchio. (Italian)

the soldier be.3SG become.older died by a.lot

'The soldier has become a lot older.' (*The soldier has died a lot)

(D) Verbs of quantized change are incompatible with *completely* and *not completely*.

(4) The soldier has died #*completely* / #*but not completely*. [Quantized change]

With verbs of non-quantized change, a bounded measure of the change can arise as an *implicature* either because of a property of the adjectival base of the verb (cf. 5) or because of a property of an argument (cf. 6) (Hay, Kennedy & Levin 1999). The compatibility with *completely* indicates that the said implicature can arise, whereas the compatibility with *but not completely* indicates that since this is an implicature, it can be cancelled.

(5) Mary has straightened the antenna *completely* / *but not completely*.

(6) Mary has lengthened the trousers *completely* / *but not completely*.¹

¹ Dan Everett noted that the behaviour of *lengthen* as a verb of quantized or non-quantized change may depend on whether it is understood as 'cause to) become longer' or as 'unroll'.

⇒ Verbs of non-quantized change can have telic behaviour.

3. Van Valin's (2005, 2018) accomplishment representations

Van Valin (2005:44) proposes that BECOME ought to be broken down into PROC + INGR to capture morphologically transparent contrasts like the one in (7a-b).

(7a) PROC **cold'** (x) (see Mparntwe Arrernte *irrernte+irre*) (Van Valin 2005: 44)

(7b) PROC **cold'** (x) & INGR **cold'** (x) (see Mparntwe Arrernte *irrernte+arle+irre*)

Van Valin (2018) convincingly argues for the separation of PROC and INGR in the LS of active accomplishments

(8a) [**do'** (x, [**run'** (x)]) ∧ PROC **cover.path.distance'** (x, (y))]

(8b) [**do'** (x, [**run'** (x)]) ∧ PROC **cover.path.distance'** (x, (y))] & INGR **be-at'** (z, x)

4. Questions arising from the above

- i. Should we *only* break down BECOME into PROC+INGR in the cases illustrated in (7a-b, (8a-b)?
- ii. Should we differentiate the LS of verbs of quantized and non-quantized change?

Although Van Valin (2005:44) suggests that BECOME can still be used for *melt* and *dry*, because they normally entail both a process and a result state, he also notes that, with such verbs, the progressive yields PROC **pred'** because the progressive is incompatible with achievements. In fact, this is the case with all accomplishments, although accomplishments of quantized change do not allow *for* temporal adverbials.

(9a) The soldier is dying vs. *The soldier died for an hour. [Quantized change]

(9b) The child is growing / The child has been growing for months. [Non-quantized]

The behaviour of *increase* and *decrease* (Rappaport Hovav 2008) also suggests that we should distinguish PROC and INGR.

(10a) The level of the water in the river increased (i.e., kept increasing) for hours. [Process]

(10b) The level of the water in the river increased in an hour. [Accomplishment]

(10c) The price of electricity increased at midnight. [Achievement]

⇒ BECOME should be broken down into PROC+INGR in all cases.²

4.1 Evidence from Italian

Further evidence in support of the distinction of PROC and INGR in LS is provided by the selection of the perfect auxiliary in Italian: the perfect auxiliary 'be' is selected with monovalent states, achievements and accomplishments (cf. 11a), whereas 'have' is selected with activities (cf. 11b) (see Centineo 1986, Van Valin 1990, Bentley 2006 for an account in terms of *PSA markedness*).

² Kiyoko Toratani raised the interesting issue of the predications formed with the verb *become* plus an adjective, suggesting that there may be evidence from Japanese that in some such predications the two operators should not be distinguished.

- (11a) Il treno è salito (su per la collina in due ore). (Italian)
the train *be.3SG* gone.up up for the hill in two hours
'The train went up (the hill in two hours).'
- (11b) Il treno ha sobbalzato (per ore).
the train *have.3SG* jolted for hours 'The train jolted (for hours).'

However, there are accomplishments that allow process readings (Bentley 2006: 41-55), in which case the perfect auxiliary 'have' is selected.

- (12a) La legna (si) è bruciata. [Accomplishment] (Italian)
the wood REFL *be.3SG* burned
'The wood burned.'
- (12b) La legna ha bruciato per ore. [Process]
the wood *have.3SG* burned for hours
'The wood has burned / has been burning for hours.'
- (13a) La frutta è marcita (in/?per una settimana). [Accomplishment] (Italian)
the fruit *be.3SG* rotted in for a week
'The fruit rotted (in a week).'
- (13b) La frutta ha marcito per/*in una settimana. [Process]
the fruit *have.3SG* rotted for in a week
'The fruit has rotted / has been rotting for a week.'

The alternations in (12a-b), (13a-b) support the decomposition of BECOME into PROC+INGR: without PROC, we cannot explain the selection of 'have' in (12b), (13b).

Observe that (14) entails (13b), but NOT (13a): Italian provides evidence that the progressive of verbs of non-quantized change entails the PROC component.

- (14) La frutta sta marcendo. (Italian)
the fruit *be.3SG* rotting
'The fruit is rotting.'

5. Back to quantized and non-quantized change

- ii. Should we differentiate the LSs of verbs of quantized and non-quantized change?
- ⇒ Yes. We must acknowledge the difference between verbs which lexicalize a specific final goal state and verbs which only entail that a final state exists, since this difference is grammatically salient (cf. 1 to 4 and 12 to 13).

A possibility would be to include *only* PROC **pred'** in the LS of verbs of non-quantized change (cf. 7a). This solution would not capture the Italian evidence (cf. 12a, 13a) and the compatibility of verbs of non-quantized change with *in* adverbials. Therefore, we should assume that INGR **pred'** is part of their LS, i.e., that a final state is lexicalized.

Even though these verbs can exhibit non-telic behaviour (e.g., the compatibility with *for* temporal adverbials), there must be some aspect of their lexical meaning that determines the accomplishment behaviour. After all, activities do *not* select 'be' in Italian and are *only* compatible with *for* temporal adverbials (see Dowty 1979 for relevant caveats).

(15a) *Il treno è sobbalzato.

the train be.3SG jolted

'The train jolted.' [intended reading]

(15b) Il treno ha sobbalzato (per ore/ *in un'ora).

the train have.3SG jolted for hours in an hour 'The train jolted (for hours).'

5. My proposal

The verbs of non-quantized change are accomplishments, like those of quantized change.³ They lexicalize a final state, but not a *specific* final state (Beavers 2013). The implicature discussed in Hay et al. (1999) (cf. 5, 6) is the implicature of a specific final state.

In the absence of a specific final state, verbs of non-quantized change admit process readings (*for* adverbials and 12b, 13b), whereby the reaching of a state is grammatically irrelevant.

Nonetheless, we have to assume that a state is part of the LS to account for the accomplishment behaviour, including 'be' selection in Italian. I thus propose the following LSs.

(16a) PROC **pred'** (x) [verbs which only lexicalize the process, cf. 7a]

(16b) PROC **pred'** (x) & INGR **pred'** (x) [verbs of quantized change]

(16c) PROC **pred'** (x) & INGR **pred α'** (x) [verbs of non-quantized change]

- The lack of the INGR component in (16a) indicates that the verb only lexicalizes the process (and entails the lack of a final state).
- INGR **pred'** (x) in (16b) (e.g., INGR **dead'** (x)) represents a lexicalized specific final state.
- INGR **pred α'** (x) (e.g., (INGR **α long'**, **α rotten'**, etc.) in (16c) represents a final state, but not a *specific* one.

Pred α' only indicates that a final state exists. This type of final state need not be salient in grammar. Similarly to *for* temporal adverbials, which only pick out the PROC component of verbs of non-quantized change, when 'have' is selected in the perfect in Italian only the PROC component of the LS is grammatically relevant (... with the consequent assignment of the macrorole actor?).⁴

References

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³ These can also be achievements, in RRG terms, a point that we can disregard here.

⁴ As I pointed out in the response to a question, it remains a moot point – and a very interesting question indeed – why the auxiliary alternations discussed above only occur with a very small number of verbs of non-quantized change in Italian.

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