From syntax to roots: a syntactic approach to root ontologies

In this paper, we challenge the need for any *grammatically relevant* ontology of roots, and we advocate instead for a view where features commonly ascribed to roots in fact emerge from the syntactic context where those roots appear. We show some theoretical and empirical advantages of such a take.

Some theories of argument structure which explicitly recognise and formally implement a division of labour between so-called *structural semantics* (Harley & Noyer 2000) and *encyclopaedic semantics* (Marantz 1995f) put forth a classification or *ontology* of roots whereby they are sorted into different types both predicting their compatibility with a given syntactic and structural-semantic environment and determining semantic effects in the predicate, such as Aktionsart. Harley (2005), for instance, points out to two properties of roots, (un)boundedness and thematic/type interpretation, which yield Aktionsart effects and determine their place in the argument structure configuration, respectively. With respect to the former we concentrate here on Harley's proposal on locatum denominal verbs, like *saddle* or *butter*. These verbs are presented as heading telic or atelic predicates, depending, respectively, on the bounded or unbounded nature of the root they contain (see (1)). The analysis Harley puts forth, based on Hale & Keyser (1993f), involves a small clause where the subject is the surface object of the verb and the predicate is a prepositional projection hosting the root in complement position (see (2)). The core of Harley's proposal is that the (un)boundedness of √SADDLE and √BUTTER is able to affect the inner aspect of the predicate because the roots are in an argumental position (complement to P). We note here, however, that locatum verbs containing an unbounded root, like √BUTTER, are also able to license a telic interpretation (see (3)), namely when the change they imply is understood as definite (that is, for instance, when the bread is taken as completely buttered in (3)). What we would like to claim, then, is that the preposition in Harley's representation of (2) should be endowed with some ± telic feature (see Mateu 2002 for a correlation between Hale & Keyser's (2002) terminal coincidence relation and telicity, on the one hand, and their central coincidence relation and atelicity, on the other): i.e., when present, it is this P-feature that is grammatically relevant and not the (un)boundedness of the root (as argued in Mateu 2002, middle formation and depictive secondary predication are sensitive to terminal but not central coincidence relation: e.g., *These horses corrall/*push easily*). When no such P-feature is present, the (un)boundedness of the root is free to have an effect on the inner aspect, as happens with unergative verbs like *foal* or *drool*, respectively heading telic and atelic predicates (see (4) and an analysis in (5)). Importantly, however, this root-driven (a)telicity in unergatives does not seem to have grammatical effects; for instance, telic unergatives endowed with a bounded root select *avere/avoir* ('have') and not *essere/être* ('be') in Italian/French, contrary to the rest of telic intransitives (see (6) for Italian). In a nutshell, Harley's observation that the (un)boundedness of roots may determine the Aktionsart of the predicate is true, but obtains only if the grammatical structure permits it. On the other hand, Harley (2005) provides an example of an analysis in which roots are assigned a place in the structural description according to the theta role they seem to represent in the predicate. In particular, she observes that roots naming the object which is interpreted as an instrument in the scene described by the predicate (cf. √HAMMER in (7)) do not behave like roots with other thematic interpretations (cf. √FOAL and √DROOL in (4)a and (4)b, respectively), since the former do not affect the Aktionsart of the resulting predicate, while the latter do according to their (un)boundedness properties. The conclusion is that an instrument-naming root cannot be assigned an argumental position in the argument structure configuration, since in these positions the (un)boundedness of the roots determine the (a)telicity of the surface predicate (cf. (5), an analysis of (4)). Consequently, a provisional analysis is put forth where the root is linked to the light verb but does not occupy any position in the argument structure (cf. (8)). However, we show that, despite the intuitive interpretation of √HAMMER as an instrument in (7), at least for the telic version an analysis is preferable in which the root does occupy a place in the argument stucture configuration. In particular, we propose that we are dealing with a change-of-state predicate (like (9), involving root √MELT), which should receive a description such as the one in (10) (where conflation processes have been omitted for clarity's sake). Evidence for the change-of-state status of telic *hammer* is its ability to license a restitutive interpretation of the adverb *again* (cf. (11)) (see von Stechow 1995); additional evidence, illustrated with Catalan *rastellar*, 'rake', is the fact that the telic use of these verbs admits secondary depictive predication (cf. (12)a, unlike other atelic predicates (cf. (12)b) (see Mateu 2002). Complementarily, and in agreement with Harley (2005), we believe that a mechanism akin to her Manner incorporation (cf. (8)) does exist in natural language, and that it is this syntactic mechanism which licenses an instrument or manner interpretation of the root (as in the resultative structure in (13)), as opposed to the predicative interpretation that the structure imposes in (10). (cf. Mateu 2002, McIntyre 2004, den Dikken 2008, among others, for different approaches to Manner incorporation).

In the second part of the paper, we deal with the so-called "manner/result complementarity" (cf. 14) in a non-lexicalist model which lacks Rappaport Hovav & Levin's (1998; 2008) ontological categorization of roots and their deterministic integration into non-syntactic event schemas. Basically, we show how their descriptive observation in

(14) can be accounted for in a syntactic model where semantic notions like "manner" and "result" become grammatically relevant because they can be claimed to be configurationally read off the mere syntactic argument structure: we show that manner is to be read off the adjunction relation to *v*, whereas result is to be read off the Small Clause-like structure, which is typical of (but not reduced to) change of state verbs, respectively (cf. Hale & Keyser 2002). Accordingly, we argue that the "manner/result complementarity" follows from a more general fact: i.e., how primitive elements of argument structure are composed in the syntax. We use the verb *climb* (cf. Fillmore 1982; Jackendoff 1985; Mateu 2002; Rappaport Hovav & Levin 2008) to exemplify our abovementioned proposals. This verb has been said to be interesting in that it shows two different uses, a manner use and a result/directionality one: cf. (15a) and (15b), respectively.

According to Rappaport Hovav & Levin (2008), when the basic manner meaning of *climb* is dropped out (e.g., when clambering is not involved), this verb can be said to lexicalize a directional or result sense. However, unlike them, we do not think that the polysemy shown in (15) must lead us to categorize the root of *climb* into two lexical senses: a manner of motion one in (15a) and a result/path one in (15b). Rather our claim is that the root √CLIMB can be freely merged in an unergative structure in (15a) or can occupy the Small Clause-like predicate position of an unaccusative structure in (15b) (NB: auxiliaries BE and HAVE are selected in the Dutch counterparts of (15a) and (15b), respectively; cf. den Dikken 2006). As emphasized above, it is then the mere syntactic argument structure that tells us that manner is involved in (15a) and result in (15b). Furthermore, consider the minimal pair in (16): as above, scrutinizing the grammatically relevant meaning of "manner" of *climb* should not be based on the presence of "clambering" in (16a) vs. its absence in (16b) (cf. Rappaport Hovav & Levin 2008) but rather should be based on purely syntactic factors. Our claim is that the syntactic argument structure of (16b) does not include a (secondary) different root of *climb*, i.e., a directional one. For us both examples involve the very same root, the directionality or the result being encoded not by the verb but rather by the satellite *out*. To our view, the existence of cases like (16b), which do not involve the manner sense of clambering, does not question the existence of the *syntactic* process of "Manner conflation": i.e., as far as their syntax is concerned, apparently problematic examples like (16b) also involve this process, while examples like *The train went out of the tunnel* do not. Accordingly, we argue that both examples in (16), the agentive and the non-agentive ones, involve the very same conflation process of the root with a null unaccusative light verb: [[ᵥ [√CLIMB]-GO] [{*Joe/the train*} *out of the tunnel*]]. Crucially, √CLIMB is not interpreted here as result since it does not occupy the SC-like predicate position. Rather it is interpreted as "manner" since it is the adjunction process with *v* that is involved.

We conclude by analyzing the transitive use of the verb *climb* in (17). To be sure, (17) could be said to have the same conceptual meaning involved in *Joe climbed to the top of the mountain* (cf. 16a; cf. Jackendoff (1985, 1990) for a such a proposal) but our claim is that their compositional semantics is not the same, since they represent two different syntactic construals: as noted, the latter is to be analyzed as the unaccusative constructions in (16), whereas (17) can be argued to be provided with the same syntactic argument structure which is found in *route verbs* (cf. Tenny 1994), which can be argued to involve the conflation of the root with an agentive light verb: cf. (18), e.g., [Joe...[ᵥ [√SWIM]-DO] the channel]). We concur with Rappaport Hovav & Levin's (2008) conclusion that Manner but not Result/path is encoded by the verb in (17) (*contra* Jackendoff 1985, 1990). However, for our present purposes, it is important to point out that we reach the same conclusion from different considerations: while they bring pragmatic arguments to their point ("the direction of motion in transitive uses <cf. 17> is determined contextually from the combination of the manner, the nature of the reference object, and the intention of the agent". RH&L: 11), we offer a purely syntactic argument: i.e., Manner (and not Result) is involved (17) since the root is merged to agentive *v* (no SC is involved). Interestingly, the Romance counterparts of (18) in (19) express the same basic syntactic unergative (DO) structure in a more transparent way.

All in all, our proposal is that what on an intuitive level seems intrinsic features of the root, such as "entity", "manner", "result", etc. are in fact properties of the structure (e.g., result being the interpretation of an inner small clause-like predicate (cf. Hale & Keyser 2002) or manner being the interpretation of an adjunct to v, etc.). As a consequence, the epistemological priority of root ontologies is cast doubt upon, and a particularly abstract vision of roots emerges, where roots by themselves do not represent entities, results, manners, properties, etc. Accordingly, the ontological status of the root is not what *pre*determines the linguistic derivation, as depicted in (20a) (e.g., cf. Rappaport Hovav & Levin's (1998; 2008) "canonical realization rules"). Rather it is the structural position the root occupies in the syntactic event/argument structure that determines its "ontology". The picture we argue for is the one depicted in (20b) (cf. Borer 2005).

(1) The (un)boundedness of roots in locatum verbs determine their Aktionsart
    a. John saddled the horse #for five minutes (Harley 2005: (44a)); cf. bounded √SADDLE
    b. Adelaide buttered the bread for two minutes (Harley 2005: (45d)); cf. unbounded √BUTTER
(2) [vP [DP John/Adelaide] [v' v [SC [DP the horse/the bread] [PP P [vP [√ [√SADDLE/√BUTTER]]]]]]] (Harley 2005: (40))
(3) Adelaide buttered the bread in one minute; Susan watered the garden in an hour; Bill greased the chain in five minutes; Jill painted the wall in a day (telic versions of Harley's (2005) (45))
(4) The (un)boundedness of roots in unergative activity verbs determine their Aktionsart
    a. The mare foaled in/#for two hours (Harley 2005: (10a)); cf. bounded √FOAL
    b. The baby drooled for/#in two hours (Harley 2005: (14a)); cf. unbounded √DROOL
(5) [vP [DP The mare/The baby] [v' v [vP [√ [√FOAL/√DROOL]]]]] (Harley 2005: (11) and (16), adapted)
(6) La giumenta ha figliato/ *è figliata in/??per due ore; cf. bounded √FIGLIO, 'son' (Italian; Mateu 2008: (38b))
    the mare has foaled.M.S is foaled.F.S in/for two hours
    'The mare has foaled in two hours'
(7) John hammered the metal for/in 5 minutes (Harley 2005: (46a))
(8) [vP [DP Sue] [v' v <hammering> [vP [√ [√(hit) [DP the metal]]]]]] (Harley 2005: (48), angled brackets representing her Manner incorporation)
(9) The sun melted the snow
(10) [vP [DP John] [v [PathP [DP the metal] [Path [PlaceP Place √HAMMER]]]]] (~"John [v CAUSE [SC the metal HAMMERed]]")
(11) John hammered the metal sheet in 5 minutes, but someone creased it. Sue hammered it *again*, in 4 minutes.
(12) Availability of depictive secondary predication with telic instrument-verbs (Catalan)
    a. El terreny, en Joan el rastellà sec
       the field ART Joan it.M.S rake.PST dry.M.S
    'The field Joan raked while dry'
    b. ??Les eugues en Joan les va empènyer prenyades (Mateu 2002: (26a))
       the mares ART Joan them.F.PL PST.3S push.INF pregnant.F.PL
    'The mares Joan pushed while pregnant' (intended meaning)
(13) [vP [DP John] [[v v √HAMMER] [PathP [DP the metal] [Path [PlaceP Place √FLAT]]]]]
(14) *Manner/Result Complementarity*: manner and result meaning components are in complementary distribution: a verb may lexicalize only ONE. (Rappaport Hovav & Levin 2008)
(15) a. Joe climbed.   b. The prices climbed.
(16) a. Joe climbed out of the tunnel.   b. The train climbed out of the tunnel.
(17) Joe climbed the mountain.
(18) Joe swam the channel; Joe walked the trail; Joe canoed the stream.
(19) a. En Joe va fer el canal nedant.   (Catalan)
       the Joe PAST do the channel swimming
    b. En Joe va fer el recorregut caminant.   c. ?En Joe va fer el riu amb canoa.
       the Joe PAST do the trail walking   the Joe PAST do the river with canoe
(20) a.   Root ontology → Event/argument structure → Syntax
    b.   Syntax→ Event/Argument structure → Root ontology

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