Exploring the multi-dimensional meaning of extra arguments in English

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INTRODUCTION The behaviour of verbs in argument alternations provide essential clues not just about their respective argument structure, but also about their meaning (Levin, 2015, a.o.). More interesting, however, is when a verb does not follow the expected alternation patterns of its class. For example, with an unaccusative construction like in (1-a), one could expect that *tear* behaves in a transitivity alternation either like *bounce*, an anticausative, optionally assigning an AGENT theta role, or like *appear*, a pure unaccusative, unable to take an AGENT or CAUSER subject (Schäfer, 2009). (1-b) demonstrates the anticipated anti-causative pattern, showing that *tear* can have both agentive and non-agentive causers as subjects. (1-c), on the other hand, shows an additional possibility for the subject, one lacking intentional or causative properties: the LOCATION of the event, boldfaced in (1-c). Constructions like (1-c) are the focus of the present investigation.

(1) a. A sail tore.
     b. Claire/the wind tore a sail.
     c. **The ship** (#intentionally) tore a sail (#with its mast).

More specifically, this paper looks at a special subclass of unaccusative verbs: a set of English change-of-state verbs which exhibit unexpected linguistic behaviour (examples of eligible verbs in (2)-(5)). The construction is called "extra argument" (here, ExArg) by Hole (2006), because the surface subject is not the theme, as typical for unaccusatives, nor is it an external argument. Instead, the extra argument subject has a non-canonical thematic role: the event's LOCATION. There is also a part-of relation between this extra argument and the THEME; if there is no part-of relation, the interpretation becomes one of causation, as in (1b) above.

Additionally, there is a locative alternation which tells us more about the meaning of ExArg. This location is when the LOCATION is located in a PP and the THEME is the subject, henceforth called LocAlt; this alternation is presented in (2-5b), with the locative PP bracketed and the LOCATION boldfaced. Both variants entail that the change-of-state event is localised on the boldfaced DP. As such, one might think the two alternations describe the same event.

(2) a. **The ship** tore a sail.
     b. A sail tore [**on the ship**].

(3) a. **The skater** chipped a tooth.
     b. A tooth chipped [**in her mouth**].

(4) a. **The lizard** grew a tail.
     b. A tail grew [**on the lizard**].

(5) a. **The bucket** spilled water.
     b. Water spilled [**from the bucket**].

However, there is actually a subtle difference: LocAlt has a non-defeasible implication that the maximum change-of-state has been reached, whereas ExArg's change-of-state (COS) can also be partial if the respective verb's lexical semantics allow it. (From now on, we will only be looking at these predicates in the past tense, to exclude ambiguously non-maximal events.) This paper argues that LocAlt contributes projective meaning: an implicature of 'maximality'. (6) and (7) display the difference in not-at-issue meaning.

(6)   *No 'maximality' implicature in ExArg*

    a.   The ship tore a sail, . . . but the damage was minor.

    b.   The lizard grew a tail, . . . but not an entire tail.

(7)   *'Maximality' implicature in LocAlt*

    a.   A sail tore on the ship,   . . . #but the damage was minor.

    b.   A tail grew on the lizard, . . . #but not an entire tail.

This implicature of 'maximality' is not a conversational one, as it does not come soley from pragmatic context, but rather a "conventional" one, as the meaning is from the construction itself and is non-cancelable (Horn, 2007; Potts, 2015). Of course, the lexical semantics of the eligible verbs can play a role in the COS interpretation (although the localisation entailment remains constant). For example, the nature of a verb like *burst* in *the car burst a tire/a tire burst on the car* blocks a partial reading in the LocAlt variant. However, this would be a further argument against a conversational implicature classification.

This paper argues that both alternations have a localisation entailment, but that they differ in their not-at-issue contribution. The paper's focus is the semantic-pragmatic interface, but syntactic reasons for the licensing of an extra argument subject will be discussed in the talk.

PREVIOUS WORK Rohdenburg (1974) described Germanic "secondary subjects" in his dissertation, but without a formal analysis. Hole (2006) examines ExArg cross-linguistically, addressing the localisation entailment with a binding analysis. To my knowledge, that is the extent of theoretical research concerning the ExArg construction. As such, there currently lacks a multi-dimensional analysis accounting for the behaviour exhibited in (6) and (7) above. This study tackles that gap and, more generally, contributes to the discussion on non-canonical subjects and to the growing research on not-at-issue meaning of constructions (and not simply of lexical items).

ANALYSIS PREREQUISITES The localisation entailment, of the tear-event being on the ship, is at-issue in both alternations. In ExArg, this localisation is realised in the surface subject, as it is the LOCATION; while in LocAlt, it is more transparent, being the PP object. The diagnostic is presented with ExArg, as its localisation entailment is less transparent than LocAlt's. In the relevant construction (i.e., unintentional causer), it is infelicitous to deny that the location of the event is the LOCATION (8); as at-issue information is the descriptive content entailed in the utterance, it cannot be denied.

(8)   *At-issue meaning cannot be denied*

    a.   {The lizard}$_i$ grew a tail **#but it was not on {the lizard}$_i$**

    b.   {The ship}$_i$ tore a sail **#but it was not on {the ship}$_i$**

Similar to at-issue entailments, CIs cannot be denied; cf. (7) above. However, not-at-issue material is independent of the at-issue dimension and is able to project (Potts, 2005; Simons et al., 2010). The 'maximality' implicature behaves as a CI would, as is seen in the following two examples.

(9)   *No projective meaning*
    a.   Did the lizard grow a tail?
        ↛ 'if the COS event had occurred, it would have been a maximal COS'
    b.   Did the ship tear a sail?
        ↛ 'if the COS event had occurred, it would have been a maximal COS'

(10)   *Projective meaning*
    a.   Did a tail grow on the lizard?
        ⤳ 'if the COS event had occurred, it would have been a maximal COS'
    b.   Did a sail tear on the ship?
        ⤳ 'if the COS event had occurred, it would have been a maximal COS'

There does exist a further multi-dimensional type to consider: presuppositions. The 'maximality' implication of LocAlt is, however, no presupposition. Presuppositions, being backgrounded, contribute old information, whereas CIs contribute new information (Potts, 2005, a.o.). In the test of (11), the (prospective) content of the presupposition is underlined and the trigger is boldfaced. The presupposed content of the possessive pronoun in (a) can be repeated without sounding redundant (example after Potts 2015, 178). For the CI in (b), this repetition is odd.

(11)   a.   <u>Sam has a dog</u>. **Her** dog is sick.
      b.   A tail grew on the lizard. #<u>It was an entire tail.</u>

<u>ANALYSIS</u> To formalise both at-issue and not-at-issue meanings, both alternation variants are analysed as having two dimensions, following proposals by, e.g., Potts (2005) and Gutzmann (2015). Along the first dimension, both include the localisation entailment by virtue of the LOCATION DP. The additional dimension contains the CI for LocAlt.

First, the at-issue meaning of both ExArg and LocAlt. The verbs *tear* and *grow* are change-of-state verbs, with a lexicalised multi-value scale, bound at the upper end by the maximally-possible COS (Kennedy and Levin, 2008). To model this, we need to define a measure function (12-a). To operationalise the measure function, we need a degree morpheme; with verbs, it is a null morpheme (12-b). The LOCATION and past are added per conjunction in (13).

(12)   a.   For any measure function m, $m_\Delta = \lambda x.\lambda e.m\!\uparrow m(x)(init(e))(x)(fin(e))$
      b. $pos = \lambda m_\Delta.\lambda x.\lambda e.m_\Delta(x, e) \geq stnd(m_\Delta)$

In (12-a), the measure of change function m_Δ outputs the degree amount of change that x undergoes in e, within the interval represented by *init* and *fin*. In (12-b), *stnd* is the standard of comparision for the measure of change. The following combines *pos* with the verb, *tear*, resulting in a relation between entities and events. Also, in (b), the predicates *sail* and *boat* are inputted.

(13)   a. $pos(\llbracket \text{ tear } \rrbracket) = \lambda x.\lambda y.\lambda e.\textbf{tear}(x, e) \geq stnd(\textbf{tear}) \wedge \text{LOCATION}(y, e) \wedge fin(e) < t_{\text{now}}$
      b. $pos(\llbracket \text{ tear } \rrbracket (\text{sail})) = \lambda y.\exists e.\textbf{tear}(\textbf{sail}, e) \geq stnd(\textbf{tear}) \wedge \text{LOCATION}(y, e) \wedge fin(e) < t_{\text{now}}$
      c. $pos(\llbracket \text{ tear} \rrbracket(\text{sail})(\text{boat})) = \exists e.\textbf{tear}(\textbf{sail}, e) \geq stnd(\textbf{tear}) \wedge \text{LOCATION}(\textbf{boat}, e) \wedge fin(e) < t_{\text{now}}$

In order to account for the not-at-issue meaning, this paper follows Kennedy 2012, via Spalek 2012, in incorporating an incremental *part-of* function (14). More precisely, the variability in defining d allows for either a maximality CI or not, depending on the syntactic difference.

(14)   part-of$_{\text{inc}}$ = $\lambda x.\lambda d.\lambda p.\lambda e.\textbf{part-of}\Delta(\text{x,p,e}) \geq d$
   a.   d >0 : For each part that undergoes tearing, the tearing of the part is not a gradable event, but the whole VP can be gradable
   b.   d $= 1$: achievement-like interpretation; maximal tearing reached

In (14), p is a portion of x; the output of *part-of* is the degree to which the consitutive parts p of x changes in the event e. The definition of the degree d would be for ExArg as in (a), as the event can be gradable, that is, does not have to reach the maximal threshold, just be greater than zero. For LocAlt, (b) represents the definition of d, which accounts for the CI of 'maximality'.

(15)   *part-of* $[\![$ sail $]\!]$ =
   a.   ExArg
        The boat **partially/completely** tore a sail : $\lambda d.\lambda p.\lambda e.\textbf{part-of}\Delta(\textbf{s},p,e){>}0$
   b.   LocAlt
        A sail **completely/#partially** tore on the boat : $\lambda d.\lambda p.\lambda e.\textbf{part-of}\Delta(\textbf{s},p,e) = 1$

This *part-of* function is on a different meaning dimension than the at-issue material of (13). Depending on which syntactic variant is in use, either (a) or (b) will define the necessary condition on felicitous use. For those change-of-state verbs, such as *burst*, which necessarily have a maximal COS only the binary-valued degree d (as in (b)) is compatible.

Conclusion This short paper discussed the meaning an understudied construction alongside an argument alternation. The puzzle of why a location can be subject may be able to be explained by a possessor-raising account (Deal 2013), given the part-of relationship of the location and theme. Alternatively, a binding account of interparticipant relations and affecteehood could be a possibility (Hole, 2006). To further explore the meaning, a study with an empirical emphasis is in order.

References • **Deal**, A. R. (2013). Possessor raising. Linguistic Inquiry, 44(3), 391-432.• **Gutzmann**, D. (2015). *Use-Conditional Meaning. Studies in Multidimensional Semantics.* Oxford Studies in Semantics and Pragmatics 6. OUP. • **Hole**, D. (2006). Extra argumentality—affectees, landmarks and voice. *Linguistics*, 44(2):383–424. • **Kennedy**, C. (2012). The composition of incremental change. Demonte, V. & L. McNally (eds.), *Telicity, change, state: A cross-categorial view of event structure*, Oxford University Press, Oxford. • **Kennedy**, C. and Levin, B. (2008). Measure of change: The adjectival core of verbs of variable telicity. In McNally, L. and Kennedy, C., eds, *Adjectives and Adverbs in Semantics and Discourse*, 156–182. OUP. • **Levin**, B. (2015). Semantics and pragmatics of argument alternations. *Annual Review of Linguistics*, 1:63–83. • **Potts**, C. (2005). *The Logic of Conventional Implicatures.* OUP. • **Potts**, C. (2015). Presupposition and implicature. In Lappin, S. and Fox, C., eds, *The Handbook of Contemporary Semantic Theory*, 168–202. Wiley-Blackwell. • **Rohdenburg**, G. (1974). *Sekundäre Subjektivierungen im Englischen und Deutschen: Vergleichende Untersuchungen zur Verb- und Adjektivsyntax*, vol. 8 of PAKS-Arbeitsbericht. Cornelsen-Velhagen und Klasing, Bielefeld. • **Schäfer**, F. (2009). The causative alternation. *Language and Linguistics Compass*, 3(2):641–681. • **Simons**, M., Tonhauser, J., Beaver, D., and Roberts, C. (2010). What projects and why. In *Proceedings of SALT 20*, 309–327.