

Culminations and presuppositions*

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Abstract

In this paper, I make some novel observations about presuppositions triggered by a subset of achievements, namely, culminations like *win*, and argue that culminations are not only soft presupposition triggers of the occurrence of the activity generally preceding them, *pace* the received view (cf. e.g., Abusch 2010), but instead their presupposition is of a special kind that could be called an *extra soft presupposition*, which, in contrast to soft and hard presuppositions alike, can be cancelled even when unembedded. Moreover, I argue that there are lexical differences among different presupposition triggers, even among culmination predicates themselves, with respect to the degree of the strength of their presuppositions. In line with recent ideas (e.g., Chemla, 2009; Abusch, 2010; Romoli, 2015) about the computability of presuppositions, I propose that at least the presupposition of culminations can be derived, to which end I exploit abductive reasoning.

1 Introduction: culminations as presupposition triggers

A widely accepted idea (Piñón 1997; Löbner 2002; Heyde-Zybatow 2008; Malink 2008; Abusch 2010; Martin 2011) is that some achievements *presuppose* the occurrence of an eventuality, namely, an activity. Although (as I will discuss later) this claim is assumed to hold in general for several predicates belonging to some subset of the achievements of Vendler (1957), most authors (cf. e.g., Abusch 2010; Romoli 2015) focus on the predicate *win*, which presupposes an activity of participation. That *participate* is presupposed by *win* can be verified with standard tests of projection. Negation and conditional antecedents are two of the typical *holes* for presuppositions, i.e., presuppositions are preserved in their scope (Karttunen, 1973), and this is what we observe in the case of *win*, as shown by (1) and (2) from Zinova and Filip (2014).

- (1) a. John didn't win the marathon.
b. \Rightarrow John participated in the marathon.
- (2) a. If John won the marathon, he will celebrate tonight.
b. \Rightarrow John participated in the marathon.

These tests indicate that the implication of participation is not part of the asserted content of *win*; on the other hand, we can establish that it is a presupposition rather than a *conversational implicature* by its cancellation possibilities (Beaver and Geurts, 2013). The received view is that presuppositions — more precisely, so called *soft presuppositions*, cf., e.g., Abusch (2010) — can be cancelled under negation, but not in unembedded contexts, while conversational implicatures

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can be cancelled when unembedded. As (3) shows, *win* appears to pattern like presuppositions (though see more on this in Section 2.1¹).

- (3) a. John didn't win the race. In fact, he never participated.
 b. #John won the race. In fact, he never participated.

Thus, the received view based on considerations such as those detailed in the foregoing is that the achievement predicate *win* presupposes the occurrence of an activity of participation.

Delineating activity-presupposing achievements Although, as noted at the outset, it is mostly only the predicate *win* that is discussed in this respect, an activity-presupposition is generally attributed to a wider range of achievements. The set of verbal predicates with an existential presupposition similar to that of *win* is characterised in the literature as “achievements with a preparatory phase” (Abusch, 2010), achievements that denote the “right boundary” of an extended event (Piñón 1997; Heyde-Zybatow 2008; Malink 2008; Martin 2011), or terms that “denote the culmination of a process” (Löbner, 2002). These appear to correspond to the class of predicates called *culminations* by Bach (1986) building on the classification of Carlson (1981), which includes predicates like *arrive*, *reach*, *die*, *win*, *find*.²

The activity presupposed by *find* is *look for* (cf., e.g., Martin 2006; Malink 2008), the activity presupposed by *arrive* and *reach* is moving towards the goal, and the process presupposed by *die* can perhaps be best characterised as a gradual physical event that leads to the death of the theme (e.g., physical deterioration, a gradually decreasing supply in oxygen etc.). However, of these predicates, I know of only *find* that was studied besides *win* as a presupposition trigger (e.g., by Martin 2006, Malink 2008 and Piñón 2008). The tenability of the general claim that culminations (using henceforth Bach's terminology) presuppose the occurrence of an activity preceding them (let us call this the *activity-implication*) is therefore in need of corroboration. Piñón (1997) offers a justification for this general claim, and argues that it is rooted in an ontological presupposition: in particular, culminations describe events that are the right boundary of an extended event and so they require the existence of an extended event of which they are the boundary of. However, as I will argue in Section 2.1, such a view of the activity-implication, which obviously does not allow for exceptions to the rule, runs into problems in the face of culmination predicates being instantiated without a corresponding preceding activity.

2 Culminations as extra soft presupposition triggers

2.1 Cancellability of the activity-implication

An observation I make in Gyarmathy (2015a,b) about presuppositions triggered by culminations is that they raise a worry that has not been noted and addressed so far, namely, that there may be cases where such culminations are true of an event *without* the occurrence of an activity preceding them. Some examples are as follows:

- (4) a. The right wing **won** this contest without even participating in it.³

¹Native speakers have voiced their concern that (3b) might, in fact, be assertable in a scenario in which John won the race without participation by virtue of the fact that everyone else was disqualified. This and similar considerations will be grounds to argue that culminations are what I will call extra soft presupposition triggers.

²Note that *find* is classified as a right-boundary achievement (in Bach's terminology, a culmination) by Malink (2008) and Piñón (2008).

³<http://links.org.au/node/1210>

- b. I thought the whole deal of using 115 was that you can curve space in such a way that you “pull” your destination towards you and restore space once you are at the apex of the curvature, having effectively **arrived at your destination** without moving.⁴
- c. Mary **found** a penny quite by accident without looking for one. (*based on Martin, 2006*)
- d. The spy **died** by shooting herself, and so she wasn’t dying before she died. (*based on Piñón, 1997*)

Note that it is a well-known fact that *soft presuppositions*, such as the factive implication of *discover*, are weak and context-dependent and may be obviated. Abusch (2010) includes achievements with a preparatory phase among soft presupposition triggers, along with, e.g., verbs of accompanied motion like *accompany*. Although soft presuppositions can be cancelled, their cancellation is invariably restricted to embedded contexts: e.g., within the scope of negation, a question or the antecedent of a conditional. But what we see in the case of culminations is that their presupposition can be obviated even in unembedded contexts, that is, the sentences in (4) are truthfully assertable.

While some of the examples in (4) (those for *win* and *arrive*) may sound convoluted and involve special cases,⁵ there is a distinct contrast with at least some other (soft) presupposition triggers, whose presupposition cannot be cancelled in unembedded contexts, however convoluted the setting is. In fact, such triggers include the same culmination predicates themselves, but the presupposition under scrutiny being the implication to the occurrence of an inverse state as their result state, cf. (5a).

- (5) a. #Dorothy **arrived** at the station, even though she was already at the station.
- b. #John **accompanied** Jane across the bridge, even though Jane wasn’t crossing the bridge.
- c. #John **stopped smoking**, even though he never smoked.

Given their ability to be cancelled in unembedded contexts, I call the activity-implication of culminations an *extra soft presupposition*, which can be cancelled even when unembedded. Thus, we can extend the hierarchy of presupposition softness as follows:

- **hard presuppositions** cannot be cancelled;
- **soft presuppositions** can be cancelled in embedded contexts;
- **extra soft presuppositions** can be cancelled.

In Section 4, I will, in addition, argue that extra soft presuppositions are also different from conversational implicatures despite their similar cancellation patterns.

⁴<http://www.abovetopsecret.com/forum/thread215509/pg1&mem=>

⁵Some further examples from the Internet for *win* are as follows (my emphasis):

- (i) as far as i’m concerned sam pretty much **won** every single year without even participating. (*on winners of World’s Ugliest Dog title in the past decade and the winner of years 2003-2005*)
- (ii) That’s what validates the supporters right to say that “**we won the game**” even though they didn’t participate in the game it self.

Some further examples from the Internet for *arrive* (my emphasis):

- (iii) – at an hour which would make us fashionably late had we **arrived** at that very instant by teleportation –
- (iv) She **arrived** instantaneously, almost as if she had been transferred by wire.

2.2 Culminations and degrees of presupposition robustness

Another observation we can make about the activity-implications of culminations based on examples like those in (4) is that the *strength* of this implication differs by predicate. Predicates *win*, *arrive* and *reach* appear to fairly strongly imply the occurrence of a preceding activity: as mentioned above, these predicates necessitate extremely convoluted uses to exemplify presupposition cancellation in unembedded contexts. In contrast, *find*—even though it is sometimes cited (e.g., in Malink, 2008) as presupposing an activity of looking for the Theme—has a presupposition that is more easily cancelled (it is quite possible to find something by accident). As for *die*, even if it does presuppose a process of the condition of the experiencer deteriorating, that is also very easily cancelled (one can die instantaneously, e.g., in an accident). This observation about presuppositions, interestingly, mirrors a recent observation by van Tiel et al. (2015) about *scalar implicatures*: they noted that there are various degrees of the rate at which scalar inferences are drawn from different scalar expressions.

It would be a welcome feature of an account of activity-implications (or of presuppositions, or of implicative contents in general) if it could provide an explanation of why such lexical differences in the degree of presupposition robustness (over and above the well-established soft/hard, or the proposed extra soft/soft/hard distinction) occur.

3 Former accounts of the activity-implication

Lexical specification As regards the source of the activity-implication, Piñón (1997, 2008) and Malink (2008) assume that culminations (in their terminology, right-boundary achievements) lexically presuppose a preceding activity, which can be encoded, for instance, with axioms of the kind “For each finding event, there is a searching event of which the finding event is a right boundary” (Piñón, 2008):⁶

$$\forall e \forall t_r [(find(e) \wedge \tau(e) \sqsubseteq t_r) \rightarrow \exists e' [search(e') \wedge t_r \sqsubseteq \tau(e') \wedge right_boundary(e, e')]] \quad (1)$$

Piñón (1997) argues that the source of this lexical presupposition is an *ontological* presupposition, namely, that a right boundary presupposes the occurrence of something it is the right boundary of.

However, this proposal is obviously not compatible with the observations above about the cancellability of the activity-implication. For instance, not all findings are preceded by searchings. Piñón (2008, p. 164) is, in fact, aware of this problem (and actually appears to be one of only few authors to acknowledge this problem), and proposes in a footnote that (the German counterpart of) the word *find* is ambiguous, and that “[t]here is another sense of *finden* for ‘accidental findings’ that does not presuppose a searching activity per se [...] [h]owever, for expediency I set aside this use of *finden* here.” I am not sure whether positing such a lexical ambiguity in the case of *find* (and *all* culminations, in general) is warranted. Indeed, applying some classical tests of ambiguity from Zwicky and Sadock (1975) suggests that *find* is a single lexical entry.⁷

⁶Piñón (2008) uses the variable t_r in the axiom below to quantify over reference times; τ is the temporal trace function from events to their runtime, as usual.

⁷While (ia) below from Zwicky and Sadock (1975) is unproblematic (*dog* is ambiguous between a male dog and the dog species), (ib) appears contradictory. Also, while (iia) from Zwicky and Sadock (1975) only has two readings (both Morton and Oliver threw their lunch to the floor, or both of them ate it) instead of four (i.e., it excludes “crossed understandings”), (iib) does not seem problematic, that is, a “crossed understanding” interpretation (finding after searching and finding by accident) is possible, indicating a lack of ambiguity.

A way to reconcile the lexical axiom of Piñón (2008) in (1) with unpaired culminations (findings, in particular) is to use a generic quantifier instead of a universal one:

$$\text{GEN}[e](\forall t_r[(\text{find}(e) \wedge \tau(e) \sqsubseteq t_r) \rightarrow \exists e'[\text{search}(e') \wedge t_r \sqsubseteq \tau(e') \wedge \text{right_boundary}(e, e')]]) \quad (2)$$

However, it seems to me that such an axiom still raises some questions. In particular, the precise interpretation of GEN is notoriously elusive; but even given one specific interpretation of GEN, how can such axioms explain the differences we find between different lexical items in the strength of their activity-implication (cf. Section 2.2)? More importantly, though, where does such an axiom come from? We cannot assume with Piñón (1997) anymore that it is an ontological presupposition (i.e., that findings are boundary events and they require something to be a boundary of), because then why are findings without any searching events allowed? My proposal in Section 5 can be seen as an attempt at uncovering the source of such axioms, while allowing for the possibility that different culminations imply the occurrence of an activity with different strength.

Alternatives-based accounts Abusch (2010) and Romoli (2015), in contrast to the purely semantic presupposition account of Piñón and Malink, propose to derive the presupposition of culminations (among others) in analogy to scalar implicatures, arguing that they are associated with lexically specified alternatives: e.g., for *win*, $\{\text{win}, \text{lose}\}$ (Abusch, 2010) or $\{\text{win}, \text{participate}\}$ (Romoli, 2015). These alternatives then form the basis of pragmatic reasoning similar to what is traditionally assumed in the case of scalar implicatures.

The question that arises is again what the source of these lexically encoded alternatives is. Why is it exactly these predicates that are specified with alternatives (and not predicates like *explode* that Bach 1986 calls *happenings*, which do not imply the prior occurrence of an activity), and why are these the alternatives that are encoded? And more pertinently to the goals of this paper, how are extra soft presuppositions differentiated from merely soft presuppositions on these accounts? And why do we find different degrees of implication strength?

I do not wish to suggest that these questions cannot be answered in an alternatives-based approach to presuppositions; in fact, differences between triggers in the robustness of their implicative content must have some explanation in such frameworks, given that (as noted above) van Tiel et al. (2015) observed exactly such graded differences in the case of *scalar triggers*, whose semantics is almost invariably assumed to exploit alternatives. I will, however, propose an alternative analysis of activity-implications in Section 5, which might in the long run be actually combined with alternatives-based or axiom-based approaches.

4 Presuppositions versus scalar implicatures

The question arises, though, if we should perhaps conclude based on the possibility of cancellation in a non-embedded context that the activity-implication is a conversational implicature rather than a presupposition (with the observed graded differences in the strength of implication fitting in straightforwardly with the observation of van Tiel et al. 2015 about scalar triggers).

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- (i) a. That dog isn't a dog: it's a bitch.
b. ?John found this pen, but didn't *find* it: he wasn't looking for it.
 - (ii) a. Morton and Oliver tossed down their lunches.
b. Morton and Oliver found a penny each. Morton was looking for one, but Oliver just found one by accident.

I maintain that that is not the correct conclusion, as, contrary to conversational implicatures, the implication to the occurrence of the activity part does not seem to be calculable solely from the meaning of the culmination and general principles of *cooperative conversation*, but seems to involve a conventional aspect (even the alternatives-based approaches mentioned above use *lexical* alternatives to derive presuppositions, but not scalar implicatures).

In addition, the experimental work by Bill et al. (2014) also indicates that the activity-implication of *win* is different from *scalar implicatures*: they found that the inference from a sentence like *The bear didn't win the race* to the bear participating in the race is much more easily cancelled than the inference from a sentence like *Some of the lions have balloons* to not all of the lions having balloons. Of course, further experimental work is necessary to show that the existential presupposition of *win* and other culminations is different from all other kinds of conversational implicatures besides scalar implicatures. But presuppositions (that of culminations among them) have only been analysed in analogy to scalar implicatures out of conversational implicatures so far, and as for the maxims of Relevance and Manner, it is difficult to see what role they could play in the inference from, say, *win* to *participate*.

Further motivation for regarding the activity-implication of culminations like *win* as a presupposition comes from an observation I put forth in Gyarmathy (2015b), namely that the conjunction of the implied and asserted content (in this order) with *and* (*in fact*) is admissible for presuppositions, be they hard (as in (6)), soft (as in (7)), or extra soft (as in (8)), but odd for scalar implicatures (as in (9)).

- (6) Jane came and (in fact) John came, **too**.
- (7) a. Jane walked across the bridge and (in fact) John **accompanied** Jane.
b. John was smoking and (in fact) he then **stopped smoking**.
- (8) a. John participated and (in fact) **won**.
b. John walked toward the station and (in fact) **arrived** at the station.
- (9) ??John didn't eat all of the cookies and (in fact) he ate **some** of the cookies.

Theoretical support for this difference in behaviour comes from the idea put forth by Chemla (2009) and Romoli (2015) that soft presupposition triggers are *strong scalar items* — as opposed to scalar implicature triggers, which occupy an opposite position on Horn-scales, i.e., they are weak scalar items. For instance, according to Romoli (2015), the alternatives associated with *win* are {*win*, *participate*}, where *win* entails *participate*.⁸ In contrast, for the alternatives *some* and *all*, it is *all* that entails *some* (and so due to the Gricean maxims of conversation, *some* introduces the scalar implicature *not all*). Thus, only in the case of presuppositions is it the case that the implied content is *weaker* than the asserted content, and it is pragmatically acceptable to add a stronger piece of information to a weaker one. Note that (as pointed by an anonymous reviewer,⁹ as well as Todor Koev, p.c.) (9) can be rendered felicitous by using *but* instead of *and*. This in fact supports the foregoing argumentation, as the difference between *and* and *but* is a pragmatic one, with *but* being often used exactly in cases where the use of

⁸As I argue (cf. Section 2.1), this is no strict logical entailment relation, but only a cancellable implication.

⁹The reviewer also suggested that the infelicity of sentence (9) “seems caused by the presence of negation in the first sentence (e.g., *I didn't play tennis and I played football* also sounds odd)”. However, this is not the case, as witnessed by (ia) (note that *some* is also a scalar implicature of *not all*) which does not contain negation in the first sentence, and by (ib) showing that negation in the first sentence does not rule out acceptability:

- (i) a. ??John ate **some** of the cookies and (in fact) he didn't eat all of the cookies.
b. I don't play tennis, and (in fact) I only do combat sports.

and would be pragmatically odd (cf., e.g., ?*John is a criminal and an honest man* versus *John is a criminal but an honest man*).

While I do not believe that the activity-implication is a scalar implicature (or any other kind of conversational implicature), I do agree with authors like Chemla (2009) and Abusch (2010) that at least some presuppositions can be *calculated*, similarly as with (though not in the exact same way as) implicatures, and this is what I aim to do for culminations, building on a special kind of inference that is used widely in human reasoning.

5 The source and cancellability of the activity-implication

5.1 Abductive reasoning

In order to derive the activity presupposition of culminations, I propose to exploit *abduction*, i.e., the inference to the best explanation introduced by Charles Sanders Peirce, which is (contrary to deductive reasoning) defeasible. Abductive reasoning has come to be widely employed in AI (cf., e.g., Hobbs et al. 1993; for an overview, see, e.g., McIlraith 1998), and it is also abundantly used in everyday reasoning (cf. Douven, 2011). I propose that abduction is ideally suited for accounting for at least some defeasible inferences—including the activity-implication. Curiously, abduction has not yet been exploited much in formal semantics and pragmatics. An exception is Piñón (2009, 2011), who uses abduction to derive the actuality entailments of ability modals,¹⁰ but the present proposal builds most closely on Varasdi (2010, 2014), who offers an analysis of the imperfective paradox via an exploitation of an inverse reasoning that is basically at the core of abduction (even though he does not use the word “abduction”).

Abduction involves: (i) something that is *observed* and is to be explained, (ii) a *theory* (which encodes the non-defeasible rules of reasoning), and (iii) the *explanation* abducted on the basis of (i) and (ii), which together with the theory entails the observation.¹¹ The abducted explanation needs to be the “best” one among possible explanations, where what counts as “best” depends on the concrete framework of abduction. An explanation is generally regarded better than another one if it is simpler (e.g., in a logical representation language, consists of less literals), and/or more probable etc.

Abductive inferences often involve an inference to the antecedent of a conditional on observing the consequent. Thus, if we observe q , and our theory tells us that $p \rightarrow q$, then we abduce p , because together with the theory, this entails what we observe, and is definitely at least among the simplest explanations.

5.2 Culminations and abduction

In deriving the presupposition of culminations, I draw on the exceptionless rule that *whenever* an extended event satisfying certain conditions occurs (for winning, participating and coming in first place, for arriving, movement to the goal), then its culmination can be described with the relevant culmination predicate *without exception*. So we have the (deductive) inference, “if P (an extended event) occurs, then Q (a culmination) occurs”. Then, what I propose happens, is an *abductive step*, deriving an inference to the best explanation (which is sufficient, but not necessary for what is observed). So by abduction we get “if Q (a culmination) occurs, then P (an extended event) occurs.”

¹⁰Thanks to Fabienne Martin for pointing this out to me.

¹¹There are less demanding approaches to abduction, as well, in which case simple consistency with the theory suffices (McIlraith, 1998).

Via this inference, properties common to the (*non-final* parts of) events in *P* are those presupposed by the culmination denoting *Q* (e.g., for *win*, *participate*). Because it is not a deductive step, there may be cases where the reasoning fails: finding without searching, winning without participating etc. If we assume that, e.g., there are relatively speaking more findings without searchings than winnings without participatings, and that abduction is sensitive to such ratios (though need not rely solely on these), then we can now also explain lexical differences between culminations relating to the strength of their presupposition given simply differences between the ratio of “unpaired” events belonging to different culmination predicates.

A possible objection to this analysis is that there might be a danger of overgeneralisation, because abduction is an extremely powerful tool. An anonymous reviewer made such an objection: “I’m wondering whether this explanation might not overgeneralise: a situation in which, e.g., some but not all of the apples are red can be described with *some* so if *some* is used listeners may abductively infer that a situation in which all of the apples are red is excluded.” But in fact, we do want the defeasible inference from *some* to *not all* to go through (even though it will not go through based on the reasoning put forth by the reviewer, as we do not reason based solely on a single observation), as it *is* a defeasible inference, and defeasibility is exactly the hallmark of abductive inferences. And the standard Gricean maxims-based explanation might be seen as a “meta-level” abduction, which involves not only observations and theories about facts of the world, but also ones about *utterances* about facts of the world: the best explanation for why the speaker used *some* is that it is not true that all apples are red, so this observation (speaker used *some*, but speaker didn’t use *all*) can be explained with the theory (Maxim of Quality and Maxim of Quantity) and the abduced explanation (not all apples are red).

What may at first sight seem like a case of overgeneralisation, however, is the following: suppose that, by vast majority, whenever someone eats some apples, they eat all (of a bunch). In this case, from the observation that *x* ate some apples, we would abduce that they ate all, quite contrary to the scalar implicature of *some*. However, note that this inference would be based on reasoning solely about facts of the world. Taking into account additional facts, in particular that someone uttered *x ate some apples*, and extending our theory with the cooperative principles of conversation, we would now cancel our original inference (that *x* ate every apple) and abduce its opposite, that *x* in fact did *not* eat every apple. This (as Károlyy Varasdi, p.c., noted) highlights the importance of the *non-monotonicity* of abductive reasoning, that is, that abductive inferences are defeasible when information is added.

In contrast to the case of *some* and (*not*) *all*, the abductive inference about culminations presented above based on the facts of the world is not retracted when taking into account “metal-level” information (about utterances). This is because, as noted by Chemla (2009) and Romoli (2015), culminations as presupposition triggers occupy a different place among the set of alternatives as scalar triggers, and are *strong* scalar items. This also means, however, that their activity-implication is a weak scalar item, and so at the “metal-level” we abduce *not win* from *participate*, similar to abducing *not all* from *some*: if someone utters *John participated in the race yesterday*, we at least weakly infer that John did not win.

So while the danger of overgeneralisation is a valid worry about abduction in general, an abductive system does have predictive power. And it can also arguably cater for the observed differences between the strengths of the implications of triggers. For instance, in our case, if *find* does presuppose *search*, then *win* must also presuppose *participate*, because our model contains much less cases of winning without participating than findings without searching, so if there is enough grounds for abducing *search* from *find*, then the same reasoning must also make us abduce *participate* from *win*. And, by contrast, we do not predict happenings like *explode* to have an activity-implication, as there is no sufficient grounds to abduce one.

5.3 Presupposition projection and at-issueness

The abductive inferencing process only explains the defeasible activity-implication of a sentence asserting the occurrence of a culmination-event. However, once we have this inference from the positive form, we can explain why it *projects* (from under typical holes like negation, the antecedent of a conditional, etc.) drawing on the idea going back to at least Stalnaker (1974) that presuppositions are inferences that are not about the main point (Martin, 2006; Simons et al., 2010; Abrusán, 2011, a.o.). Simons et al. (2010) claim that “all and only those implications of (embedded) sentences which are not-at-issue relative to the Question Under Discussion [QUD] in the context have the potential to project.”

We can argue, as suggested by Fabienne Martin (2006 and p.c.), that the activity-implication of a culmination (e.g. participation) is not at-issue relative to a QUD relative to which the asserted content of the culmination (the occurrence of the culmination, e.g., winning) is at issue. If we can prove this to be true,¹² then we can argue that the activity-implication projects by virtue of it not being at-issue content.

6 Conclusion

Based on an inspection of the presupposition of culmination predicates, I have argued that i) there are so called extra soft presuppositions, which are unlike soft presuppositions in that they can be cancelled when unembedded, ii) there are lexical differences between presupposition triggers as regards the strength of their presupposition, mirroring similar recent observations on scalar expressions, and iii) by drawing on abduction, we can explain the activity-implication of culminations along with its (different degrees of) cancellability.

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¹²At-issueness is notoriously difficult to verify, but, e.g., an experiment involving question–answer pairs could be used to verify the claim.

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