

Now and then: Perspectives on positional variance in temporal demonstratives¹

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Abstract. Despite its reputation as an archetypal example of indexicality, the temporal adverb *now* has many non-indexical uses. It is not surprising, then, that recent work has instead focused on an intuition that *now* evokes some notion of change or contrast in the preceding discourse. We argue that this intuition should not be directly encoded in the semantics of *now*, but rather should be derived as a product of how its semantics interacts with information structure. Our argument is guided by a previously unnoticed contrast in its interpretation based on its position in the sentence. We propose that, in sentence-initial position, *now* is a contrastive topic, which contributes to the intuition that it “pushes forward” the narrative. Its true semantic shape is revealed in final position. This is, we propose, indexical, though not to the utterance time, but a more flexible assessment time. We extend our account of *now* to *then*, treating them as a proximal-distal pair of temporal demonstratives, identifying some similarities and some differences in how they are interpreted in a narrative.

Keywords: indexicality, tense, temporal adverbials, information structure, contrastive topic

1. Introduction

It is common in introductions to indexicality to use *now* as an example of an indexical temporal adverb, denoting the time of utterance. As students quickly note, however, there are many occasions where *now* does not seem to have much to do with the actual utterance, particularly in narrative passages (Dry, 1979; Kamp and Rohrer, 1983: 265–266; Kamp and Reyle, 1993: 595; a.o.).

- (1) a. Someone touched his elbow so timidly that he thought it had been accidental, until the gesture was repeated with more insistence. **Now** he turned and saw Nebamun walking beside him. (Anton Gill, *City of Dreams*)
- b. An education at Oxford appealed to a new class of rich and well-to-do men who wished to use it to improve the prospects of their sons. The Colleges were **now** therefore able to charge fees[. . .]
(C. D. Darlington, “Oxford unreformed: The uses of abuses”)
- c. Fei Yen bowed deeply, the two maids on either side of her copying her automatically. The young Prince had showered and changed since she had last seen him. He wore red **now**[. . .] (David Wingrove, *The Middle Kingdom*)

In the face of such examples, an indexical semantics for *now* would seem to be impossible, and contemporary semantic accounts have largely abandoned one.

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Instead of indexicality, recent work on *now* has been animated by the intuition that it can invoke a recent change in, or some notion of contrast with, the preceding discourse (e.g., Recanati, 2004: 19; Lee and Choi, 2008; Hunter, 2010: 53–86; Lee, 2017). In (1a), for instance, the protagonist’s turning takes place only after his elbow was touched again, with *now* seeming to pick out some time interval after the event of the preceding sentence. Many of these theories bake some notion of change or contrast into the semantics of *now*, in the end treating it as fundamentally different from other temporal frame adverbials.

While we are sympathetic to the intuition that *now* invokes some change or contrast that “pushes forward” a narrative, we will argue that this intuition is a product of its semantics, in combination with information structure. Our starting point is a hitherto unrecognized positional contrast. When *now* is in sentence-initial position, it can “push forward” the narrative. However, when it is not — when it is, for instance, sentence final — it is not able to. It thus cannot be the semantics of *now* alone that is driving the intuition about change or contrast. The positional asymmetry, we will propose, tracks the information structure associated with these positions. When *now* is in initial position, it is a contrastive topic, which contributes to how the narrative is pushed forward.

In turn, *now*’s true semantic shape is best revealed in positions where it is not associated with a particular information-structural category, such as sentence-final position. This shape is, ultimately, indexical, though not to the utterance time, but rather a more flexible assessment time (Schlenker, 2004; Sharvit, 2004, 2008; MacFarlane, 2014). As it happens, several other temporal expressions exhibit a similar disassociation from the utterance context. These include temporal adverbials, such as *today* or *tomorrow*, in free indirect discourse (Banfield, 1982; Doron, 1991; Sharvit, 2004, 2008; Eckardt, 2015), as well as the present tense in its historical use (Schlenker, 2004; Anand and Toosarvandani, 2017, 2018). There are accounts of these expressions, too, in terms of indexicality to the assessment time.

In the next section, we first lay out a positional generalization for *now*, focusing on short, two sentence discourses. In Section 3, we offer an overview of the semantics of *now* as assessment time sensitive, before turning, in Section 4, to a more detailed discussion of this account. Coupled with contrastive topic and independent constraints on discourse interpretation, it yields the intuition of a forward-pushing narrative. In Sections 5 and 6, we show how this account can be extended, first by looking at how *then* differs from *now*, and then at larger discourses beyond two-sentence sequences.

2. A positional generalization about *now*

To start, we adopt Altshuler’s (2016: 13–59) characterization of the intuition about change or contrast. In discourses like (1a) above, as well as in (2) below, he describes *now* as giving rise to a *forward-shifted* interpretation relative to a salient event in the preceding discourse, corresponding roughly to a gloss of “with this having happened” (cf. Hunter, 2010: 53–86).

- (2) I could’ve located this place even without the brilliance of the falling snow, for this spot, razed by fire, was where I’d ended the life of my companion of twenty-five years. **Now**, snow covered and erased all the clues that might have been interpreted as signature[...]

(Orhan Pamuk, *My Name is Red*)

By Altshuler's (2016: 36) reading, the snow's covering and erasing the clues takes place quite some time after the murder of the speaker's companion. It is not always necessary, however, for such a great length of time to have elapsed. In (1a), the protagonist's turning presumably takes place right after his elbow was touched again.

Altshuler proposes to encode this forward movement directly in the semantics of *now*. He takes it to presuppose a salient event in the preceding discourse, locating the onset of the pre-jacent eventuality within its final (or result) state.

- (3) $\llbracket \text{now}_j \phi \rrbracket = 1$ iff there is an eventuality e such that $\llbracket \phi \rrbracket(e) = 1$ and the onset of e is in the final state of $g(j)$; defined iff $g(j)$ is an event

There are a couple reasons we are wary of encoding change directly in the semantics of *now*. First, there are attested examples where a sentence with *now* describes an eventuality that overlaps the most recent event (Hunter, 2011: 377; Lee, 2017: 631).

- (4) Darwin **gave up** his original assumption that evolution occurred best in small, isolated populations, because he **now feared** that small populations would not throw up enough individual variants for selection to be effective.
(Peter J. Bowler in *Variation: A Central Concept in Biology*)

Darwin's fearing clearly temporally overlaps his giving up his original assumptions about evolution. In principle, this interpretation could be compatible with the semantics in (3), if *now* here is anaphoric to a salient event located even farther back in the discourse than the most recent sentence, so that there is just accident overlap with the preceding sentence.

It is possible, however, to control for this possibility, using two-sentence discourses where the putative antecedent for *now* can only be the event described by the first sentence. In such simple discourses, there are indeed clear-cut cases where a *now* sentence is interpreted as temporally overlapping the preceding sentence. In particular, this is the case when *now* occurs in sentence-final position.

- (5) The janitor turned off^{e1} the lights. The room was empty^{s2} **now**. $e_1 \circ s_2$

In fact, an overlapping interpretation seems to be obligatory here, something that can be shown more directly by looking at cases where an overlapping interpretation would be anomalous. In Partee's (1984) example in (6), the medial sentence is infelicitous because the state it describes cannot overlap the event described by the first sentence.

- (6) People began^{e1} to leave. #The room was empty^{s2}. The janitors came^{e3} in. $*e_1 \circ s_2$
(Partee, 1984: 262)

If *now* is intrinsically capable of forward shifting, it should be able to override this default interpretation for statives, in which they temporally overlap the most recent event (Hinrichs,

1986; Partee, 1984). But it cannot, at least not in final position.²

- (7) People began^{e1} to leave. #The room was empty^{s2} **now**. *e1 ∘ s2

For this reason, it is unlikely that forward-shifting is part of the semantics of *now* proper. Strikingly, however, in sentence-initial position, *now* does give rise to a forward-shifted interpretation, allowing it to avoid the infelicity arising from an incompatible state (much like a temporal adjunct clause, e.g., *When the room was empty...*; Partee, 1984: 262).

- (8) People began^{e1} to leave. **Now**, the room was empty^{s2}. e1 < s2

The availability of forward shifting thus depends on the position of *now* in the sentence, an empirical generalization we can characterize as follows:

- (9) *Positional Generalization (preliminary version)*
 For a sentence *S* containing *now* and a sentence *S'* that immediately precedes *S*,
- (i) if *now* is in initial position, *S* does not overlap *S'*, but rather temporally follows *S'*;
 - (ii) if *now* is in final position, *S* is “roughly simultaneous” with *S'*.

In sum, a forward-shifted interpretation should derive from its semantics, but not be hard-wired into it. We advance such a semantics next, which treats *now* essentially as a temporal demonstrative.

3. A bicontextual semantics for *now*

As we noted above, the apparent non-indexical behavior of *now* is not atypical, as other temporal expressions exhibit the same behavior. Temporal adverbials such as *today* and *tomorrow* famously ignore the actual time of utterance in free indirect speech (Banfield, 1982; Doron, 1991; Sharvit, 2004, 2008; Eckardt, 2015). And, in its historical use, the simple present describes events that do not take place at the time of utterance (Schlenker, 2004; Anand and Toosarvandani, 2017, 2018).

There are accounts for both these cases that assume natural language expressions are interpreted relative to two contexts: a *context of utterance* (*u*) and a *context of assessment* (*a*). Individual expressions can be sensitive to one, the other, or both of these contexts. Adopting the division that Sharvit (2004, 2008) proposes, local pronouns are sensitive to the utterance context (10), while tense and temporal adverbials, such as *today*, are sensitive to the assessment context (11).

²With *now* in final position, there does not have to be strict temporal overlap: a state or event can immediately follow the preceding event.

- (1) a. John turned^{e1} off the light. It was dark^{s2} **now**.
 b. John entered^{e1} the room. The phone rang^{e2} **now**.

It is unclear whether this is the same “just after” relation found in narrative progression, which Dowty (1986) shows can also hold of states. We have chosen our examples above to control for this confounding factor.

- (10) a. $\llbracket I \rrbracket^{u,a,g} = \text{SPEAKER}(u)$
 b. $\llbracket \text{you} \rrbracket^{u,a,g} = \text{ADDRESSEE}(u)$
- (11) a. $\llbracket \text{PRES}_i \rrbracket^{u,a,g} = g(i)$; defined iff $g(i) \subseteq \text{TIME}(a)$
 b. $\llbracket \text{tonight} \rrbracket^{u,a,g} = \text{the night of the day surrounding } \text{TIME}(a)$

In the default case, the assessment context and utterance context are the same. Then, tense and temporal adverbials are well-behaved, tracking the time of the actual utterance.

The non-indexical uses of tense and temporal indexicals arise when the two contexts come unmoored from each other. For free indirect discourse, Sharvit (2004, 2008) proposes a silent attitude operator, which shifts the assessment context, and hence also the temporal indexicals sensitive to it. And, for the historical present, Anand and Toosarvandani (2017, 2018) propose that the assessment context can float free of the utterance context even in root contexts, subject to certain pragmatic principles (cf. Schlenker, 2004).

This is how, we propose, the non-indexical uses of *now* come about. It is essentially a temporal demonstrative, as shown in (12a), referring to a time interval that is part of the assessment time.

- (12) a. $\llbracket \text{now}_j \rrbracket^{u,a,g} = g(j)$; defined iff $g(j) \subseteq \text{TIME}(a)$
 b. $\llbracket \text{then}_j \rrbracket^{u,a,g} = g(j)$; defined iff $g(j) \circ \circ \text{TIME}(a)$ ³

As Recanati (2004) suggests, we can think of *now* as the proximal member of a demonstrative pair with *then*, its distal companion. While *now* picks out a time interval inside the assessment time, *then* refers to a time interval outside of it, as in (12b).

If *now* picks out a time interval, it must be able to compose with the rest of the sentence. We assume this happens via a null preposition IN, which, as defined in (13), locates the reference time somewhere within the *now*-interval.

- (13) $\llbracket \text{IN} \rrbracket^{u,a,g} = \lambda J \lambda I.1$ iff $I \subseteq J$

To sketch the compositional process, consider the second sentence in (14), repeated from (5) above.

- (14) The janitor turned off^{e1} the lights. The room was empty^{s2} **now**. $e_1 \circ s_2$

Given its semantics, the bimorphemic adverbial [IN now_j] constrains the extent of the reference time, like a temporal frame adverbial: it must be contained inside a time interval that is itself contained in the assessment time.

At first glance, this engenders a conflict with what one might think is the most natural semantics for past tense, which locates the reference time *outside* the assessment time.

- (15) $\llbracket \text{PAST}_i \rrbracket^{u,a,g} = g(i)$; defined iff $g(i) < \text{TIME}(a)$

³For time intervals I and J , $I \circ \circ J$ iff I and J are disjoint.

However, simple past morphology is not infrequently analyzed as polysemous across several temporal notions (cf. Kratzer, 1998, Kamp and Reyle, 1993: 598–601). Kratzer (1998), for instance, proposes that the simple past in English also conceals a perfect-like interpretation, a proposal rooted in some fine-grained differences between it and its German equivalent, the *Präteritum*.

One of these differences is that the simple past is good out of the blue, but the *Präteritum* is not, unlike the *Perfekt* (see Dickey, 2001 for similar facts on Dutch).

- (16) Context: You are looking at churches in Italy.
 a. Who **built** this church? Borromini **built** this church.
 b. # Wer **baute** diese Kirche? Borromini **baute** diese Kirche.
 (Kratzer, 1998: 106)

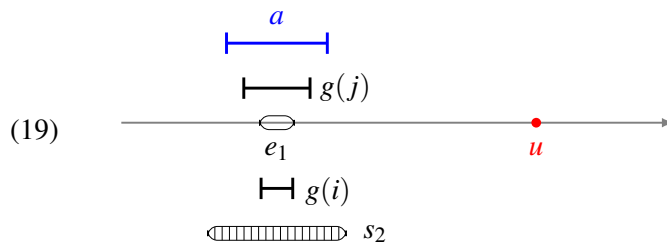
When a contextually-salient past time interval has already been introduced, however, both the simple past and the *Präteritum* are possible. Kratzer suggests that the English phonology masks two distinct morphemes, which correspond in some way to the two German forms. One of these is like PAST, defined in (15), and the other has roughly the semantics of the R(EMOTE)-PAST in (17).

- (17) $\llbracket \text{R(EMOTE)-PAST}_i \rrbracket^{u,a,g} = g(i)$; defined iff $g(i) \subseteq \text{TIME}(a) < \text{TIME}(u)$

Only R-PAST is compatible with *now*. Assuming its existence, the internal composition of (14) is shown in (18): *now* combines with the verb phrase, which is simplified to be a description of times.

- (18)
- $$\begin{array}{c}
 \text{1 iff } \mathbf{\text{the-room-be-empty}}(g(i)) \wedge g(i) \subseteq g(j); \\
 \text{defined iff } g(i) \subseteq \text{TIME}(a) < \text{TIME}(u) \text{ and } g(j) \subseteq \text{TIME}(a) \\
 \swarrow \quad \searrow \\
 \begin{array}{cc}
 \text{R-PAST}_i & \lambda I.1 \text{ iff } \mathbf{\text{the-room-be-empty}}(I) \wedge I \subseteq g(j); \\
 g(i); & \text{defined iff } g(j) \subseteq \text{TIME}(a) \\
 \text{defined iff } g(i) \subseteq \text{TIME}(a) < \text{TIME}(u) & \\
 \swarrow \quad \searrow & \\
 \text{VP} & \lambda I.1 \text{ iff } I \subseteq g(j); \\
 & \text{defined iff } g(j) \subseteq \text{TIME}(a) \\
 \swarrow \quad \searrow & \swarrow \quad \searrow \\
 \begin{array}{c}
 \text{the room was empty} \\
 \lambda I.1 \text{ iff } \mathbf{\text{the-room-be-empty}}(I)
 \end{array} & \begin{array}{cc}
 \text{IN} & \text{now}_j \\
 \lambda J \lambda I.1 \text{ iff } I \subseteq J & g(j); \\
 & \text{defined iff } g(j) \subseteq \text{TIME}(a)
 \end{array}
 \end{array}
 \end{array}$$

This sentence describes an event in the past of the utterance time, which is located within a *now*-interval that is itself contained in the assessment time.



For the discourse in (14), then, the *now* sentence has an overlapping interpretation because of how the *now*-interval is resolved. If it is anaphoric to the time of the most recent event — namely, the event described by the preceding sentence — the state of the room being empty must overlap the event of turning off the light. Significantly, a forward-shifted interpretation is not available, as there is simply no salient time interval posterior to the event of the first sentence.

4. How to shift forward

This suffices as a basic theory of the semantics of *now*. The remainder of this paper is dedicated to figuring out how, in sentence-initial position, *now* gains the ability to forward shift. Our intuition is that it has a particular information structure in this position.⁴

Sentence initially, *now* cannot bear a narrow focus, realized prosodically as a falling pitch accent or “A-accent” (represented below with small caps), unlike in final position. (More generally, focus is never associated with the left periphery in English.)

- (20) When does Liz leave?
- a. # [NOW]_F, she leaves.
 - b. She leaves [NOW]_F.

It can, however, be a topic, like other frame adverbials (Dickey, 2001: 69–70). Specifically, we take them to be *contrastive topics*, bearing a rising pitch accent or “B-accent” (represented with underlining) (Büring, 1997, 2003; Constant, 2014).⁵

- (21) (Yesterday,) it was raining.
- a. [Now]_T, [it is SUNNY]_F.
 - b. ?? [It is SUNNY]_F [now]_T.

Given that *now* has special information-structural properties in initial position, it seems reasonable to us to relate forward shifting to the pragmatics of contrastive topic. This will exclude interpretations where the *now*-interval overlaps with or is anterior to the time of the preceding sentence.

⁴For compositional concreteness, we assume that *now* moves into initial position, somewhere in the left periphery, stranding the “preposition.”

⁵We are uncertain whether *now* in final position can be a contrastive topic (21b). This would require it to follow the focus, which may simply not be possible in English, as it is not possible in German (Wagner, 2012: 22–23).

Since our argument is fairly involved, it is worth previewing. Excluding an overlapping interval is actually relatively straightforward. At an intuitive level, contrastive topic requires there to be a salient temporal interval that is distinct, and one might also presume disjoint, from the *now*-interval. In two-sentence discourses, this means that it will have to be disjoint from the time of the preceding sentence. To exclude an anterior interval, we will invoke an additional pragmatic constraint on the update of the assessment time, building on our previous claim that moving $\text{TIME}(a)$ backwards is sensitive to stringent anaphoricity conditions (Anand and Toosarvandani, 2018). The only remaining possibility thus is that *now* refers to a time interval that follows the time of the preceding sentence.

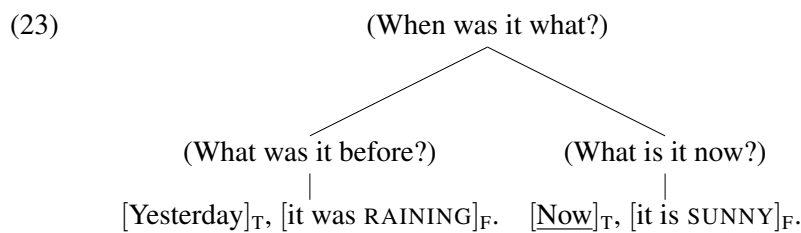
4.1. The pragmatics of contrastive topic

Büring (1997, 2003) proposes a theory of contrastive topic that builds on Rooth's (1992) alternative semantics for focus. In this account, both focus and contrastive topic introduce alternatives. These are nested, though, so that a sentence containing a contrastive topic has, as its alternative set, a set of *sets of propositions* (see also Constant, 2014).

For the sentence in (21a), where *now* occurs in initial position and bears a contrastive topic, its alternative set is a set of sets of propositions of the form 'In interval J , p was true', for some proposition p and some time J :

$$(22) \quad \llbracket [\text{now}_j]_{\text{T}} [\text{PRES}_i \text{ it be sunny}]_{\text{F}} \text{ IN } t \rrbracket_{\text{ALT}}^{u,a,g} = \{ \{ P(I) \wedge I \subseteq J \mid I \in D_i \wedge P \in D_{\langle i,t \rangle} \} \mid J \in D_i \}$$

This alternative set could, alternately, be thought of as a set of questions of the form 'At time J , what was it?', constituting a strategy of inquiry for resolving a higher-level conversational goal. By answering each of these questions in turn, conversational participants would provide a complete answer to the question *When was it what?*



A sentence containing a contrastive topic evokes such a strategy of inquiry, providing a partial answer to one of the subquestions. Other subquestions in the strategy and their answers can be represented overtly in the discourse, as in (21), or they might be covert.

The connection between a sentence's alternative set and the strategy of inquiry in which it participates is enforced via a congruence constraint (cf. Büring, 2003: 503):

- (24) *Contrastive Topic Congruence*
 A sentence S containing a contrastive topic presupposes that there is a question Q in the discourse such that:
- (i) Q is part of the strategy of inquiry evoked by S , i.e., $\llbracket Q \rrbracket \in \llbracket S \rrbracket_{\text{ALT}}$,

- (ii) S entails an answer to Q , i.e., $\exists p \in \llbracket Q \rrbracket (\llbracket S \rrbracket \subseteq p)$, and
 (iii) there is a question Q' such that $Q' \neq Q$ and $Q' \in \llbracket S \rrbracket_{\text{ALT}}$.

Importantly, a sentence with a contrastive topic presupposes two questions: one that it entails an answer to and at least one other subquestion forming part of the same strategy of inquiry.

With this in mind, consider again the discourse in (8), which has the following information structure:

- (25) The people began to ^{e_1} leave. $[\text{Now}]_T$, $[\text{the room was EMPTY}]_F^{s_2}$. $e_1 < s_2$

With this topic-focus configuration, the *now* sentence evokes a set of alternative questions of the form ‘At I_j , what happened?’ for some time I_j , just like the sentence in (22). This corresponds to a strategy of inquiry directed toward answering the question *When did what happen?*.

- (26)
- (When did what happen?)

The *now* sentence entails an answer to one of the subquestions in this strategy. In this case, the contrastive topic is licensed because another subquestion of this strategy is under discussion, one that the preceding sentence evokes.

We propose that it is because these two sentences are linked, by being answers to distinct questions in the same strategy, that the *now*-interval cannot overlap the time of the preceding sentence. In general, alternatives evoked by a focus or contrastive topic must be distinct from one another (Rooth, 1992; Wagner, 2006, cf. Büring, 2003: 523). In (27), for example, the adjectives *red* and *new* are not alternatives to one another, and hence cannot contrast with each other, because their extensions are overlapping.

- (27) # Liz bought a $[\text{RED}]_F$ convertible, before buying a $[\text{NEW}]_F$ one.

Formulating the correct definition of distinctness is a thorny issue, but it is possible to define a simple version based on disjointness:

- (28) *Distinctness of Alternatives*
 For any expression E , the members of the alternative set for E are disjoint, i.e.,
 $\forall X, Y \in \llbracket E \rrbracket_{\text{ALT}} (X \neq Y \rightarrow X \cap Y = \emptyset)$.

The alternative set for *now* will thus include the *now*-interval itself, as well as some other time intervals that are disjoint from it. This suffices to rule out an overlapping relation in two-sentence discourses, including the simultaneous interpretation that final *now* is so congenial with.

4.2. No going backwards

With an overlapping interpretation ruled out, it now remains to be shown that only a forward-shifted interpretation is possible for *now* in initial position.

Importantly, temporal backshifting — interpreting the *now*-interval anterior to an interval introduced by an earlier sentence — is never allowed, regardless of the position of *now* (Hunter, 2011: 377). In (29), whether *now* is initial or final, the enjoying cannot be located prior to the incurring of Trump’s wrath (e.g., the time of the campaign).

- (29) How things have changed since the campaign! Cohen plead guilty^{e₁} last week and incurred^{e₂} Trump’s wrath. {#Now,} he enjoyed^{s₃} his full support {#now}.
*e₁, e₂ > s₃

Since this restriction holds across positions, we propose that it follows from an independent constraint on the location of the assessment time.

In work elsewhere (Anand and Toosarvandani, 2018), we observe that the historical present is incompatible with backwards temporal sequencing:

- (30) a. The administration fires^{e₁} Mike. He loses^{e₂} his house. e₁ < e₂
b. The administration fires^{e₁} Mike. He meets^{e₂} with the ambassador. *e₁ > e₂

If historical present uses the present tense in (11a), but involves locating the assessment time somewhere prior to the utterance time, this contrast demonstrates that, insofar as TIME(*a*) can be updated throughout a discourse, it cannot go backwards. Accordingly, we proposed a two-pronged constraint on how TIME(*a*) is updated:

- (31) *Constraints on Assessment Time Shift (CATS)*
For a sentence *S* and an eventualities stack *E*, *S* can be evaluated with respect to contexts *u* and *a* such that:
a. TIME(*a*) := TIME(*u*), or
b. TIME(*a*) := *t* such that for e₀, the top of *E*, $\forall t' (t' < t \rightarrow t' < \tau(e_0)) \wedge \forall t' (t' < \tau(e_0) \rightarrow t' < t)$
(cf. Anand and Toosarvandani, 2018: 80)

The assessment time can always be set to the utterance time, an option that is probably the default. In addition, it can be updated to align with the most recent eventuality introduced in the discourse, represented as the top of an eventualities stack (cf. Bittner, 2008). It is this latter option, coupled with the semantics of PAST, which allows backshifting with the simple past in English. The same possibility does not, however, arise for historical uses of the simple present. In (30b), updating the assessment time to the run-time of e₁ will, because of the semantics of PRES, only locate e₂ during e₁.

While CATS was proposed to account for the contrast in (30), it is intended as a general theory of assessment time updating. We take the lack of backshifting with *now* as evidence for its broad applicability. For the *now* sentence in (29), CATS permits the assessment time to be

updated and anchored to e_2 . However, if this sentence is R-PAST, it will, like the present tense, restrict the reference time, and hence also the “now”-interval, to overlap the time of e_2 . That is, the *now*-interval cannot be anterior to e_2 because it is only compatible with a past tense, R-PAST, that is incompatible with backshifting.

4.3. Forward movement as narrative progression

Let’s take stock. In the previous section, we built a semantics for *now* that captures the simultaneous interpretation that arises when it is in final position. In this section, we have proposed that, in initial position, it is a contrastive topic. A constraint on the disjointness of alternatives ensures that, in this position, the *now*-interval does not overlap the time of the preceding sentence. And, as we just argued, an independent constraint on assessment time update prohibits a *now*-interval from being anterior to the preceding sentence. Put together, these only permit initial *now* to be forward-shifted.

This is a solution to the central puzzle of this paper, though one final issue remains to be resolved. If the only possible referent for *now* in initial position must be “in the future” of the preceding discourse, what is this time? As a temporal demonstrative, *now* should refer to a salient time interval, but in the discourses we have been looking at, it is not clear what this interval is. In (32), for instance, no time after the wrath incurring event is mentioned before the *now* sentence itself is uttered.

- (32) Cohen incurred ^{e_1} Trump’s wrath yesterday. **Now**, his lawyer made ^{e_2} a huge revelation. $e_1 < e_2$

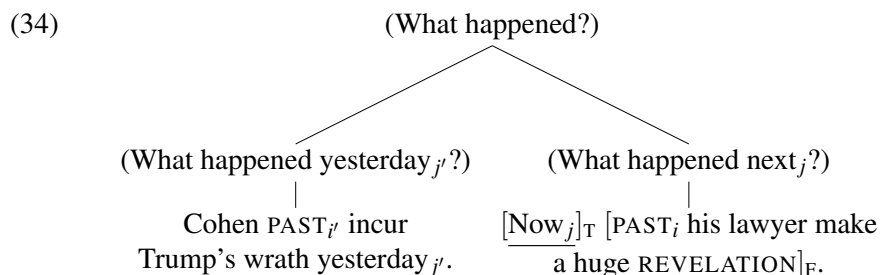
While we do not have a complete answer to this question, we think one can be found in the theory of narrative progression and how it allows, in general, for tenses to find salient temporal intervals.

Narrative progression is typically conceived of as a default, available when no other temporal order is imposed between sentences (Lascarides and Asher, 1993). This idea can be operationalized in terms of strategies of inquiries:

- (33) *Narration as Default*
A strategy of inquiry containing the question “What happened next?” is always available.

When the discourse context does not support another strategy of inquiry, this default strategy is available. This introduces a salient time interval for *now* to pick out, even if the temporal location of the interval is not entirely clear.

The strategy of inquiry for the discourse in (32) is the following, then, where the *now* sentence answers a subquestion made available by Narration as Default:



The time interval this subquestion asks about must, at the very least, follow reasonably closely the time of e_1 . This is somewhat reminiscent of the traditional characterization of narrative progression in which events are described as taking place “immediately after” one another (e.g., Hinrichs, 1986; Partee, 1984). A better gloss might be something more like “next in the story” (see Lee, 2017 for a similar idea).

It is worth noting, too, that unambiguously demonstrative expressions can, just like *now*, have a similar “next” meaning:

- (35) Cohen incurred ^{e_1} Trump's wrath. **At that point**, his lawyer hinted ^{e_2} about bombshell revelations. **At that point**, Giuliani lambasted ^{e_3} Cohen further. $e_1 < e_2 < e_3$

This suggests that the forward movement found with *now*, though restricted to narrative contexts, is of a piece with that exhibited by other demonstratives, and not simply encoded in the semantics of *now* itself.

5. *Now* and *then*

This account can be extended to *then*, which in most cases has much the same interpretation as *now*. In final position, it must be simultaneous (36b), while in initial position it can be forward shifted (36a).

- (36) a. People began ^{e_1} to leave. **Then**, the room was empty ^{s_2} . $e_1 < s_2$
 b. # People began ^{e_1} to leave. The room was empty ^{s_2} **then**. $*e_1 \circ s_2$

As a distal demonstrative, *then* picks out a time interval that is disjoint from the assessment time, as we proposed in (12b). In initial position, its lack of an overlapping interpretation follows from the same logic we laid out in Section 4.1 for *now*. It is a contrastive topic that evokes a strategy of inquiry keyed to the disjoint alternatives of the *then*-interval. If a preceding sentence answers one subquestion in this strategy, the *then* sentence will necessarily describe an eventuality located within a non-overlapping time interval.

Unlike with *now*, however, a backshifted interpretation does appear to be possible with *then* in initial position. In (37), Cohen's enjoying Trump's support can precede his incurring his wrath; compare this to (29).

- (37) How things have changed since the campaign! Cohen plead guilty ^{e_1} last week and incurred ^{e_2} Trump's wrath. **Then**, he enjoyed ^{s_3} his full support. $e_1, e_2 > s_3$

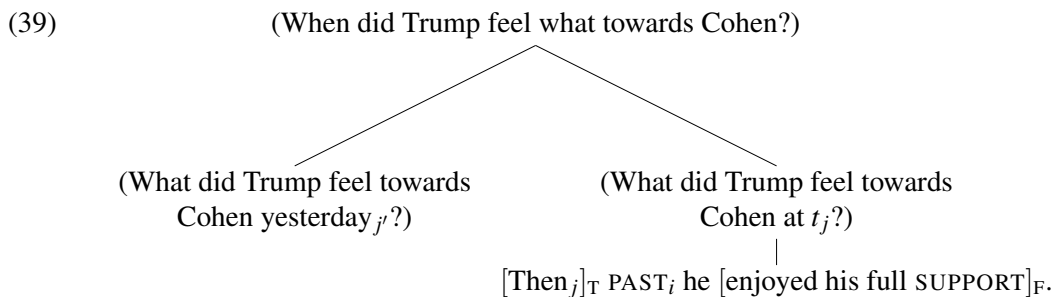
It is relevant here that *then* is only compatible with PAST, which was defined in (15). (It should be clear why *then* is incompatible with R-PAST: while the former would locate the reference time outside of the assessment time, the latter would require it to be contained inside it.) This past tense only requires the reference time to be anterior to the assessment time. In (37), the assessment time could thus simply remain moored to the utterance time throughout the discourse, or it could be updated for the *then* sentence to e_2 . In either case, PAST would not prohibit the *then*-interval, which must be disjoint from the assessment time, from being located anterior to e_2 .

Interestingly, the possibility of backshifting disappears as soon as the size of the discourse is reduced to two sentences. In (38), only forward movement is possible. Intuitively, this is because it is not clear what the *then*-time anterior to the wrath-incurring event would be.

- (38) Cohen incurred ^{e_1} Trump's wrath yesterday. **Then**, he enjoyed ^{e_2} his full support.
* $e_1 > e_2$

We trace the impossibility of backshifting in (38) to the pragmatics of contrastive topic. It requires all time intervals to be contextually retrievable, though not necessarily given, something that perhaps could be traced ultimately to the pragmatics of questions. The time intervals to which the subquestions in a strategy of inquiry are keyed must be contextually retrievable.

For the two-sentence discourse in (38), the only possible strategy of inquiry is the following one:



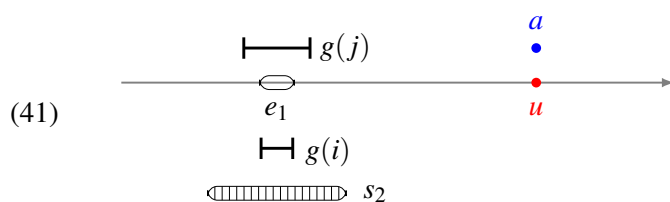
The subquestions are keyed either to a time in the day before the utterance, made retrievable by the first sentence, or to a time after it, via Narration as Default (33). Thus, there is no subquestion in the strategy the *then* sentence could answer that would give rise to a backshifted interpretation. This contrasts with the three-sentence discourse in (37), where the first sentence makes a suitable time interval available.

Finally, as we have laid it out, the account only permits *now* to occur with R-PAST and *then* with PAST. This may seem like a strange consequence. But, in fact, it may allow us to understand a subtle perspectival shift induced by substituting one of these demonstratives for the other. Consider the following minimal pair:

- (40) a. The janitor turned off ^{e_1} the lights. The room was empty ^{s_2} **now**. $e_1 \circ s_2$
 b. The janitor turned off ^{e_1} the lights. The room was empty ^{s_2} **then**. $e_1 \circ s_2$

In both discourses, the second sentence temporal overlaps the first. But, in (40a), the room being empty is described from the perspective of the time at which the lights are turned off, while in (40b), it is described from some other vantage point, possibly from the perspective of the actual utterance.

This perspectival shift corresponds to different locations for the assessment time. For *now* in (40a), $\text{TIME}(a)$ includes the *now*-interval, consequently including the reference time of the first sentence as well, as depicted in (19). By contrast, for *then* in (40b), the assessment time cannot overlap the reference time of the first sentence:



Because of the semantics of PAST, the assessment time must follow the time of the *then* sentence. One possibility is to locate it at the utterance time, a configuration that matches the more distant perspective found intuitively in this discourse.

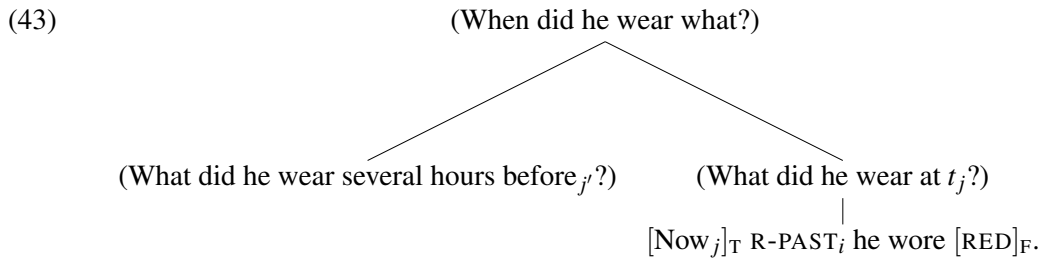
6. Revisiting the positional generalization

Looking at two-sentence discourses, the positional generalization in (9) claims that initial *now* is forward-shifting and final *now* is simultaneous. In more complex discourses, this generalization has an obvious counterexample. In initial position, *now* can have an overlapping interpretation with a preceding sentence (cf. Hunter, 2011: 377, Lee, 2017: 624).

- (42) They met^{e1} by accident, several hours later, in one of the bright, high-ceilinged corridors leading to the gardens. [...] Fei Yen bowed^{e2} deeply, the two maids on either side of her copying her automatically. The young Prince had showered^{e3} and changed^{e4} since she had last seen him. **Now**, he wore^{e5} red. $(e_3, e_4 <) e_2 \circ e_5$
(modified from: David Wingrove, *The Middle Kingdom*)

This is nothing more, though, than a problem for our initial generalization. Such flexibility is, in fact, expected under our account of forward-shifting as a product of contrastive topic.

In the two-sentence discourses we have been looking at, the first sentence has always answered a sister subquestion in the strategy of inquiry evoked by contrastive topic. Nothing, however, actually requires a preceding sentence to participate in the strategy in this way. The discourse in (42) involves the following strategy:



While material farther back in the passage might address one of the other subquestions in the strategy — what the Prince was wearing earlier that day before the accidental meeting — the sentences immediately preceding *now* do not. They can thus describe an event, e.g., e_2 , that overlaps the state of wearing red.

In fact, Altshuler’s original example in (2) motivating forward-shifting has the same kind of “long-distance” strategy of inquiry. This is more clear once the broader context for the *now* sentence is considered:

- (44) Fearing for my life, I murdered my unfortunate victim in an ordinary and crude manner. As **I returned to this fire-ravaged area night after night to ascertain whether I’d left behind any traces that might betray me**, questions of style increasingly arose in my head. What was venerated as style was nothing more than an imperfection or flaw that revealed the guilty hand.

I could’ve located this place even without the brilliance of the falling snow, for this spot, razed by fire, was where I’d ended the life of my companion of twenty-five years. **Now**, snow covered and erased all the clues that might have been interpreted as signature[...]

(Orhan Pamuk, *My Name is Red*)

Altshuler interprets *now* as locating the event of snow covering after the event of ending the companion’s life. But it is clear from the preceding context that the question being addressed is: *When were there or weren’t there still traces of the murder?* This is exactly the kind of question that the contrastive topic on *now* requires in this discourse.

To align with these examples, as well as the facts about *then* that we discussed in Section 5, we provide a revised version of the positional generalization:

- (45) *Positional Generalization (final version)*
 For a sentence S containing a temporal demonstrative D ,
- (i) if D is in initial position, S cannot temporally overlap any sentence S' with which it forms a strategy of inquiry, and
 - a. if D is *now*, then S temporally follows S' ;
 - b. if D is *then*, then S either temporally follows or precedes S' ;
 - (ii) if D is in final position, S is temporally “roughly simultaneous” with the closest preceding sentence S' .

Our account derives this revised generalization, predicting not just the interpretation of *now*

in the simple constructed examples we started with, but also the more complex, naturally-occurring examples we have discussed here.

7. Conclusion

In this paper, we have argued that the intuition of recent change or contrast for *now* arises from a conspiracy of three distinct ingredients: the pragmatics of contrastive topic, the pragmatics of backshifting, and the semantics of this adverb, which we have analyzed as indexical to a time of assessment. Of these ingredients, we take the contrastive topic component to be the central contribution of our proposal. This is partly empirical — the positional generalization is novel and, we believe, problematic for existing theories of *now*. But we also believe that the positional generalization is reflective of the role of information structure in narrative sequencing in general, something currently missing across all these theories.

This point is probably best made by considering in more detail the other accounts of *now*. There are three main theories of its semantics. In place of an indexical time coordinate, these theories make *now* sensitive to an antecedent event (Altshuler, 2016: 13–59, Carter and Altshuler, 2017), a temporal perspective point (Kamp and Reyle, 1993; Lee, 2017), or discourse coherence relations (Hunter, 2011).

We have already seen how the first account behaves: *now* presupposes some culminated event and asserts that the prejacent is in the final or result state of that event. At a conceptual level, this account combines the two properties we have attempted to decouple (contrast and temporal orientation). Empirically, this means that the simultaneous interpretation of *now* in final position is somewhat mysterious, unless a salient event can be accommodated farther back in the discourse. However, it is not clear that such a salient event is always present. In (46), for instance, no event needs to have transpired between s_1 and s_2 .

- (46) When he was a child, Ivan was sweet^{s₁}. **Now**, he was mean-spirited^{s₂}.

Our account resembles the other two theories of *now* more closely. In one, due originally to Kamp and Reyle (1993), *now* picks out a temporal perspective point, TPpt. Lee (2017) fleshes out their account, requiring TPpt in narratives to be updated with each new telic event that is introduced in the discourse to a time following it (analogous to what is supposed to happen in narrative progression). While this account bears an obvious resemblance to ours — replacing TPpt for both TIME(*a*) and the *now*-interval — Lee’s constraint is too strict. First, it does not explain why stative eventualities with initial *now* should allow forward-shifting interpretations, since TPpt is only updated by telic events. Conversely, it predicts that a telic sentence containing *now* should always temporally follow the most recent telic sentence. But, contrary to Lee’s account, a simultaneous interpretation is possible, as predicated by our account, in an elaboration context:

- (47) Whenever he used to go to a restaurant, Max would avoid all kinds of seafood. Recently, he got over his fear. He had^{e₁} a nice meal last night.
- a. **Now**, he ordered^{e₂} the salmon. $e_1 \supset e_2$
- b. He ordered^{e₂} the salmon **now**. $e_1 \supset e_2$

In the third theory, which makes *now* sensitive to discourse coherence relations, Hunter (2011) proposes that it picks out the time of the immediately dominating discourse unit. In narrative sequences, where sentences are connected by a coordinating Narration relation, this is a superordinate unit expressing a “common topic”, so that *now* picks out the temporal interval for that common topic, and hence an interval containing the entire narrative sequence. Like the TPpt approaches, this account is actually quite congenial with ours, interchanging the assessment time and the time of the immediately dominating discourse segment. However, because discourse relations determine the temporal structure between sentences, this account is ultimately more flexible than Lee’s. For instance, since elaboration relations are subordinating, the superordinate discourse unit in (47) describes e_1 , and hence *now* denotes the run time of e_1 , allowing a simultaneous interpretation for telics.

All of this means that, while neither of these latter two theories derives the positional generalization, Hunter’s is, in principle, compatible with a role for contrastive topic (while Lee’s, we believe, overpredicts). Indeed, finding a place for information structure could greatly simplify theories of discourse coherence relations. While Asher and Lascarides (2003), for instance, initially propose that Narration temporally positions one sentence immediately after another, they are forced to stipulate that a sentence-initial temporal adverbials can shift the time of a sentence even farther into the future. If these initial adverbials are all functioning as contrastive topics, it may be this information-structural category instead that is responsible for obviating a more restrictive notion of immediate subsequence.

Despite some resemblances, our account of *now* does differ from the last two theories we just considered in one significant way. We have argued for a distinction between the *now*-interval and the assessment time, while in both Hunter’s and Lee’s accounts, these intervals are collapsed. The merits and concerns of this additional degree of freedom that we avail ourselves clearly need more rigorous examination, but we leave this task to future work.

References

- Altshuler, D. (2016). *Events, States, and Times: An Essay on Narrative Discourse in English*. Berlin: De Gruyter Mouton.
- Anand, P. and M. Toosarvandani (2017). Unifying the canonical, historical, and play-by-play present. *Proceedings of Sinn und Bedeutung* 21, 19–34.
- Anand, P. and M. Toosarvandani (2018). No explanation for the historical present: Temporal sequencing and discourse. *Proceedings of Sinn und Bedeutung* 22, 73–90.
- Asher, N. and A. Lascarides (2003). *Logics of Conversation*. Cambridge: Cambridge University Press.
- Banfield, A. (1982). *Unspeakable Sentences: Narration and Representation in the Language of Fiction*. Boston: Routledge and Kegan Paul.
- Bittner, M. (2008). Aspectual universals of temporal anaphora. In S. Rothstein (Ed.), *Theoretical and Crosslinguistic Approaches to the Semantics of Aspect*, pp. 349–385. Amsterdam: John Benjamins.
- Büring, D. (1997). *The Meaning of Topic and Focus: The 59th Street Bridge Accent*. London: Routledge.
- Büring, D. (2003). On D-trees, beans, and B-accent. *Linguistics and Philosophy* 26, 511–545.

- Carter, S. and D. Altshuler (2017). 'Now' with subordinate clauses. *Proceedings of SALT 27*, 1–6.
- Constant, N. (2014). *Contrastive Topic: Meanings and Realizations*. Ph. D. thesis, University of Massachusetts, Amherst.
- Dickey, M. W. (2001). *The Processing of Tense: Psycholinguistic Studies on the Interpretation of Tense and Temporal Relations*. Dordrecht: Kluwer.
- Doron, E. (1991). Point of view as a factor of content. *Proceedings of SALT 1*, 51–64.
- Dowty, D. (1986). The effects of aspectual class on the temporal structure of discourse. *Linguistics and Philosophy 9*, 37–61.
- Dry, H. (1979). Four temporal effects of narrative now. *Texas Linguistic Forum 15*, 60–69.
- Eckardt, R. (2015). *The Semantics of Free Indirect Discourse: How Texts Allow Us to Mind-Read and Eavesdrop*. Leiden: Brill.
- Hinrichs, E. (1986). Temporal anaphora in discourses of English. *Linguistics and Philosophy 9*, 63–82.
- Hunter, J. (2010). *Presuppositional indexicals*. Ph. D. thesis, University of Texas, Austin.
- Hunter, J. (2011). Now: A discourse-based theory. *Amsterdam Colloquium 18*, 371–380.
- Kamp, H. and U. Reyle (1993). *From Discourse to Logic: Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic, and Discourse Representation Theory*. Dordrecht: Kluwer Academic Publishers.
- Kamp, H. and C. Rohrer (1983). Tense in texts. In R. Bäuerle, C. Schwarze, and A. von Stechow (Eds.), *Meaning, Use, and Interpretation of Language*, pp. 250–269. Berlin: Mouton de Gruyter.
- Kratzer, A. (1998). More structural analogies between pronouns and tense. *Proceedings of SALT 8*, 92–110.
- Lascarides, A. and N. Asher (1993). Temporal interpretation, discourse relations, and commonsense entailment. *Linguistics and Philosophy 16*, 437–493.
- Lee, E. (2017). Discourse properties of now. *Journal of Linguistics 53*, 613–640.
- Lee, E. and J. Choi (2008). Two nows in Korean. *Journal of Semantics 26*(1), 87107.
- MacFarlane, J. (2014). *Assessment sensitivity: Relative truth and its applications*. Oxford: Oxford University Press.
- Partee, B. H. (1984). Nominal and temporal anaphora. *Linguistics and Philosophy 7*, 243–286.
- Recanati, F. (2004). Indexicality and context-shift. Institut Jean Nicod and Harvard University.
- Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics 1*(1), 75–116.
- Schlenker, P. (2004). Context of thought and context of utterance (a note on free indirect discourse and the historical present). *Mind and Language 19*(3), 279–304.
- Sharvit, Y. (2004). Free indirect discourse and 'de re' pronouns. *Proceedings of SALT 14*, 305–322.
- Sharvit, Y. (2008). The puzzle of free indirect discourse. *Linguistics and Philosophy 31*, 353–395.
- Wagner, M. (2006). Givenness and locality. *Proceedings of SALT 16*, 295–312.
- Wagner, M. (2012). Contrastive topics decomposed. *Semantics and Pragmatics 5*(8), 1–54.