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Meaning of ‘now’ and other temporal location adverbs

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Abstract. This paper provides an analysis of the temporal location adverb *now*. The core data comes from free indirect discourse, where *now* often co-occurs with the past tense and has an affinity for stative sentences. Building on Kamp & Reyle’s (1993) analysis, I propose that *now* is a perspective setting anaphor: it requires an eventuality described by an aspectual phrase to hold throughout a salient event that serves as the ‘current perspective.’ The proposed meaning is compatible with both the past and present tenses and it has the same semantic type and uses the same ingredients as other temporal location adverbs.

Keywords: adverbs, aspect, tense, narrative progression, free indirect discourse, anaphora, indexicality, deixis

1 Introduction

There is a particular use of *now* where it co-occurs with the past tense.¹ This usage is often found in *free indirect discourse* (FID) viz. (1), where it is possible to understand the described eventualities as happening from the point of view of a particular character, rather than the narrator ([1], [2]). This, however, is not a necessary condition for *now* to co-occur with the past tense. For example, the state of being unpleasant to look at in (2) *must be* interpreted from the point of view of the narrator.

He came to me and told me he had been dressing in my clothes whenever I wasn't home for quite a few years, and *now he was ready to take the next step* and with the help of his doctor (that I didn't even know about) he wanted to start the process of becoming female ([3]). (1)

Anna went to her plastic surgeon. She had won the beauty contest 30 years ago. *Now the old bag was a sight for sore eyes!* (Sam Cumming, p.c.) (2)

Now exhibits two key properties in discourses such as (1) and (2). The first is that *now* is used as an anaphor. This is especially clear when one compares (2) to its counterpart without *now*. In such a case, the state of being unpleasant to look at would be understood to hold when Anna won the beauty contest. This would render the discourse infelicitous. With *now*, however, the discourse is felicitous because the described state is understood to hold throughout the event of going to the plastic surgeon. This particular event is chosen as an antecedent because *now* is an event seeking anaphor and the perfect clause in (2) makes the consequence of the winning event salient (rather than the winning event itself; see [5], [6]).² Further evidence comes from (3), which is infelicitous with *now* because the series of stative sentences don't provide an antecedent of the right type; cf. (4), which is like (3), except that a series of eventive sentence are inserted, rendering the discourse felicitous with *now*.

Samsa's room, a regular human bedroom, only rather too small, lay quiet between the four familiar walls. Above the table on which a collection of cloth samples was unpacked and spread out hung a picture. It showed a lady, with a fur cap on and a fur stole, sitting upright and holding out to the spectator a huge fur muff. Samsa {#was now/^{OK}was} intrigued by this lady (modified from [8]). (3)

¹ Lee ([4]) showed that of the 100 randomly selected narrative discourses from the British National Corpus that contained *now*, 63 had the past tense.

² Henriette de Swart (p.c.) offers an alternative analysis in which *now* locates a described eventuality onto the *main narrative timeline*—e.g. in (2), the described states are understood to hold at the time of the going-to-the-surgeon event and not the winning event because only the former event is on the *main narrative timeline*. I am open to such an analysis and note in passing that its preference to the one proposed here largely depends on the semantics of the pluperfect and an explicit theory of *narrative timelines*. The semantics of the pluperfect assumed here is motivated by flashback discourses discussed in [7] (pp. 593-611).

Samsa's room, a regular human bedroom, only rather too small, lay quiet between the four familiar walls. Above the table on which a collection of cloth samples was unpacked and spread out hung a picture. It showed a lady, with a fur cap on and a fur stole, sitting upright and holding out to the spectator a huge fur muff. *Suddenly, the lady dropped the muff and took off her cap.* Samsa could not believe his eyes. He {^{OK}was now/^{OK}was} intrigued by this lady. (4)

The other property of *now* is exemplified by discourses such as (5) and (6). Here we see that *now* is incompatible with eventive sentences ([7], pp. 595-596).³ In this way, *now* differs from all other temporal location adverbs (cf. [12]), including the seemingly similar anaphor *at that point* in (7).

He came to me and told me he had been dressing in my clothes whenever I wasn't home for quite a few years, and now he {#took/^{OK}was ready to take/^{OK}was taking/^{OK}had taken} the next step... (5)

Yesterday, Anna went to her plastic surgeon. She had won the beauty contest 30 years ago. Now she {#replaced/^{OK}wanted to replace} her nose and upper lip with those of a donor. (6)

The first of Weiss' explicitly autobiographical novels, *Leavetaking*, describes his childhood and youth until 1940. {#Now/^{OK}at that point} he essentially claimed his independence and set out to become an artist ([13]). (7)

Based on similar observations, Kamp and Reyle propose that *now* refers to a *temporal perspective point*—i.e. the speech time or a previously mentioned discourse event. The innovation of their analysis is that *now* is not treated as a *deictic expression*, i.e. one that *always* makes reference to the context of utterance (cf. [14]), viz. *will* or *I*, but rather as perspective setting anaphor whose value is always determined by the discourse context and is constrained by the tense. A problem with their analysis, however, is that they posit three past tenses even though the morphology indicates otherwise: (i) a past tense that only combines with stative sentences, (ii) a past tense that only combines with eventive sentences and (iii) a past tense that is required only in the presence of *now* ([7], pp. 601).

An alternative hypothesis is to say that in cases where *now* co-occurs with the past tense, there is an operator that 'shifts' *now*'s coordinates—e.g. in (2), an operator shifts the speech time coordinate to a past time, namely the time of Anna going to the plastic surgeon. In this way, we can maintain that *now* is a deictic expression; it refers to the (shifted) speech time.

One objection to this analysis comes from the *ad-hoc* nature of the shifting operator. Traditionally, such operators have been linked to propositional attitude verbs ([15]) and FID ([16], [17]), i.e. cases in which the 'perspective' shifts from the speaker (or narrator) to the attitude holder (or character in a novel). However, as we

³ Note that there is a reading of (5) and (6) in which the eventive predicates are acceptable. Such a reading, however, exemplifies a distinct *now*, which is not discussed in this paper (however, see [9]). The *now* considered here is truth-conditionally equivalent to *currently* and is morphologically distinguished from the other *now* in languages like Russian (cf. *sejčas* vs. *teper* discussed in [10]) and Korean (cf. *cikum* and *icey* discussed in [11]).

saw in (2), *now* can co-occur with the past tense in contexts where the described eventuality must be interpreted from the speaker’s (or narrator’s) point of view.

Another objection comes from the observation that shifting coordinates of *now* does not explain *now*’s reluctance to co-occur with eventive sentences viz. (5)-(7). This fact in particular, I believe, warrants a semantic reanalysis of *now*.

In this paper, I build on Kamp and Reyle’s proposal that *now* is a perspective setting anaphor and propose a meaning that is (i) compatible with both the past and present tenses and (ii) has the same semantic type and uses the same ingredients as other temporal location adverbs. In particular, I propose that all such adverbs have a temporal component and a discourse component. Depending on the nature of the adverb, one of these components typically plays a greater role in fixing the temporal location of an eventuality described by an aspectual phrase. In the case of *now*, however, both components play an instrumental role. They conspire to impose the following two requirements: (i) search for a topical event that serves as the ‘current perspective’ and (ii) describe what took place throughout this topical event. These two requirements capture *now*’s anaphoric nature and—given aspectual constraints on narrative progression discussed in the next section—they lead to a contradiction with eventive, but not stative verb phrases. All in all, the proposed analysis makes the correct predictions about the discourses considered in this section without “postulating apparently spurious ambiguities” ([7], pp. 599).

2 Background assumptions

It is generally held that temporal anaphora in narrative discourse motivates the notion of a *reference time*—i.e. a placeholder for where the narrative has developed ([18], [19], [20]). According to one influential analysis proposed by Bonnie Webber in [6], a reference time is either the time described by temporal location adverbs or the duration of the consequent state of a previously mentioned discourse event (cf. Partee’s “time right after”). Moreover, following [18]-[20] Webber proposed that aspect constrains the temporal location of a described eventuality in the following way: Whereas events occur within a reference time, states hold throughout that time.

As an illustration of Webber’s analysis, consider the Russian discourse below, in (8), which contains a sequence of sentences in the perfective aspect. With the adverb in (8b), this discourse entails that the dropping-off event preceded the money-giving event. However, without the adverb in (8b), the understood event ordering is reversed: the dropping-off event is understood to follow the money-giving event.

Dudkin da-l nam ogromnuju summu deneg.
 Dudkin PFV.give-PST-3S us huge sum money. (8a)
 ‘Dudkin gave us a large sum of money.’

Za nedlju do togo my zavez-l-i emu producty.
 From week to that we PFV.drop.off-PST-2P him products (8b)
 ‘A week before that we had dropped off products at his place.’

Applying Webber’s analysis to (8), we would say that the dropping-off event is located within the reference time, namely a time that precedes the money-giving event by a week. When the adverb is not present, however, the reference time is supplied by the discourse context and refers to the consequent state of the giving event. Given that the dropping-off event is contained within this consequent state, it is correctly predicted that the dropping-off followed the money-giving.

In sum, Webber’s analysis is elegant because it relates events to times specified by an adverb in the same way it relates events to times provided by the discourse context. Despite its elegance, however, I argued in [21] and [22] that Webber’s analysis cannot account for the Russian imperfective aspect, which relates distinct event parts to the reference time. Which event part is at play depends on how the reference time is specified. For example, in (9b), the adverb specifies the reference time and the dropping-off event is understood to occur a week before money-giving event as in (8b). This expected if we once again say that the dropping-off event is contained within the reference time. This relation, however, makes the wrong prediction about (9b) when there is no adverb and the reference time is therefore specified by the discourse context. In particular, it predicts that the dropping-off event follows the money-giving event, viz. (8b) without the adverb. However, the dropping-off event is still understood to precede the money-giving event, viz. (8b)/(9b) with the adverb.

Dudkin da-l nam ogromnuju summu deneg. (9a)
 Dudkin PFV.give-PST-3S us huge sum money.
 ‘Dudkin gave us a large sum of money.’

Za nedlju do togo my zavozi-l-i emu producty. (9b)
 From week to that we drop.off.IPF-PST-2P him products
 ‘A week before that we had dropped off products at his place.’

To account for the data above, I argued that it is necessary to split the notion of a *reference time* into two distinct parameters (cf. [7]; see also [23], [9] for independent evidence). I proposed a *birelational analysis* in which aspectual meaning involves both temporal information and information about discourse connectivity. In particular, aspect requires two inputs relative to which a described eventuality is located—(i) a *time* that is specified by a temporal location adverb (or some other grammatical expression) and (ii) a *state* that is specified by the discourse context. Events are required to be contained within the two inputs, while states hold throughout them.

Applying this analysis to the Russian imperfective, I proposed that a described event is required to be contained within a time input, while the consequent state of the described event is required to contain a state input. This allows us to say that when the adverb is present in (9b), the dropping-off event is contained within a time that precedes the money-giving event by a week; when the adverb is not present, the consequent state of the dropping-off event contains a state, namely the consequent state of the money-giving event. This correctly predicts that the dropping-off event preceded the money-giving event whether or not the adverb in (9b) is present.

In what follows, I assume a birelational analysis of aspect without further comment. As shown in §4, this assumption is crucial to giving an adequate semantics for *now*. I end this section by providing birelational meanings of two English

expressions: eventive and stative aspectual phrases in (10) and (11) respectively. In the next section, I provide details about how the inputs to these phrases are supplied.

$$\text{AspP [Anna laugh]} \rightsquigarrow \lambda s \lambda t \exists e [\tau(e) \subseteq t \wedge \tau(e) \subseteq \tau(s) \wedge \text{laugh}(\text{anna}, e)] \quad (10)$$

$$\text{AspP [Anna be.sick]} \rightsquigarrow \lambda s' \lambda t \exists s [t \subseteq \tau(s) \wedge \tau(s') \subseteq \tau(s) \wedge \text{be.sick}(\text{anna}, s)] \quad (11)$$

3 Meaning of temporal location adverbs

I assume the syntactic architecture in Fig. 2, where aspectual phrases combine with a tense operator and the resulting denotation combines with an adverb.

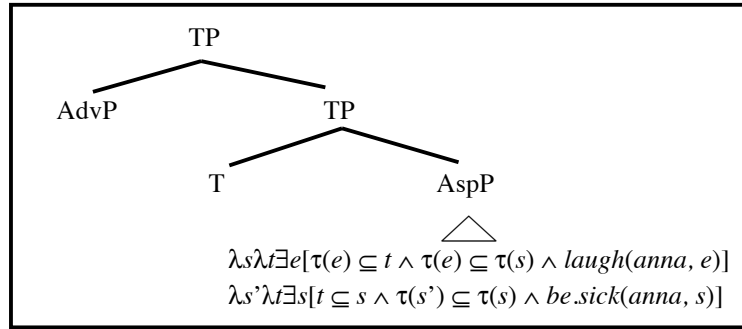


Fig. 1. Assumed syntactic architecture.

I treat tense operators as relations between the speech event e_0 and a time argument t . For example, the past tense operator PST below, in (12), requires that a time argument precede the run time of the speech event and the present tense operator PRS in (13) requires that the two be identified.

$$T \text{ [PST]} \rightsquigarrow \lambda Q \lambda s \lambda t [t < \tau(e_0) \wedge Q(s, t)] \quad (12)$$

$$T \text{ [PRS]} \rightsquigarrow \lambda Q \lambda s \lambda t [t = \tau(e_0) \wedge Q(s, t)] \quad (13)$$

With regard to temporal location adverbs like *yesterday*, *the day before*, *at 5*, and *February 15, 1981*, I propose that they combine with TP and have two functions. They supply a time input—which serves as the *location time* for a described eventuality (cf. [7])—and specify its duration as well as its relation to a *perspectival event*—i.e. the speech event or a previously mentioned discourse event (cf. Kamp and Reyle’s notion of a *temporal perspective point* in [7]).⁴ Moreover, they supply a state input, which does not play a significant role in locating the described eventuality.

⁴ On this analysis, the contribution of tense is superfluous in the presence of certain adverbs. Following [24], I take this to reflect a remarkable property of natural language that in the presence of an adverb like *a week ago*, the past tense must still be expressed.

As an illustration of the analysis, consider the denotations of *yesterday* and *the day before* in (14) and (15):

$$\text{Adv [yesterday]} \rightsquigarrow \lambda Q \exists t \exists s [\text{day}(t) \wedge t <_{\text{day}} \tau(e_0) \wedge Q(s, t)] \quad (14)$$

$$\text{Adv [the day before}_n] \rightsquigarrow \lambda Q \exists t \exists s [\text{day}(t) \wedge t <_{\text{day}} \tau(e_n) \wedge Q(s, t)] \quad (15)$$

Both adverbs specify that the location time t is a 24-hour interval of time denoted by *day* that precedes the perspectival event by a day. However, *yesterday* is deictic, i.e. it requires that the perspectival event be the speech event e_0 , whereas *the week before* requires that the perspectival event be a previously mentioned discourse event e_n . This explains why *yesterday* can be used discourse initially, but *the day before* cannot.

A question that arises is: Where does TP get its two inputs if there is no adverb present? Following work by Carlota Smith ([25], [26]), I assume that semantically, there is always an adverb present (even if it not there syntactically). In particular, I assume that episodic sentences in the past tense that do not have an overt adverb combine with a silent operator (cf. Bäuerle’s silent ‘once’ in [27]). As illustrated in (16), operator supplies a state input s_n that requires a salient state antecedent that I will refer to as the *topic state*. Moreover, it supplies a time input which does not play a significant role in locating the described eventuality (cf. [7], pp. 528-529).

$$\text{Adv [<O}_n\text{>]} \rightsquigarrow \lambda Q \exists t [Q(s_n, t)] \quad (16)$$

The proposed semantics of this operator can be taken to correspond to the overt narrative marker *then*. This would explain, for example, why the sentences in (17) are infelicitous out-of-the-blue: there is no topic state provided by the discourse context.

$$\# \text{Avital came in} / \# \text{Then Avital came in.} \quad (17)$$

Moreover, it would explain the understood event ordering in the discourses below in (18): *then* (in its covert or overt manifestation) requires that the sitting down event be contained within the topic state. Assuming this state is the consequent state of the coming in event, it is correctly predicted that the sitting follows the coming in.

$$\begin{array}{l} \text{Yesterday, Avital came in. She sat down.} \\ \text{Yesterday, Avital came in. Then she sat down.} \end{array} \quad (18)$$

In sum, temporal location adverbs supply both temporal information and information about discourse connectivity. In particular, they supply two inputs that are required by aspectual phrases—a *time* and a *state*. Adverbs like *yesterday* and *the day before* are similar insofar as the supplied *time* input plays a greater role in fixing the temporal location of the described eventuality; the two adverbs differ solely in whether the perspectival event is the speech event or a previously mentioned discourse event. On the other hand, the *state* input supplied by the adverb *then* (at least on its ‘narrative meaning’, cf. [28]) plays a greater role in fixing the temporal location of the described eventuality. This explains why we never see this adverb discourse initially. In the next section, I propose that both the *state* and *time* inputs supplied by *now* play a significant role in fixing the temporal location of the described eventuality.

4 Meaning of ‘now’

In the introduction, we saw that *now* has two key properties: it is an anaphor that seeks a salient event antecedent and it has an affinity for stative sentences. The nuts and bolts of my analysis are as follows. *Now* encodes the following directions: (i) search for a topical event that serves as the “current perspective” and (ii) describe what took place throughout this topical event. The latter direction is consistent with the aspectual requirements imposed on stative predicates, but not eventive ones, thereby explaining the contrast in (19). Moreover, the contrast in (20) is explained in the following way. Without *now*, the states of being old and sick are required to hold throughout the topic state, namely the consequent state of the winning event (cf. discussion of (18)). With *now*, however, the states of being old and sick are required to hold throughout a topical event that serves as the ‘current perspective.’ The topical event must be the event of going to the plastic surgeon assuming that the past perfective clause *had won the beauty contest* makes the consequent state of the winning event salient (and not the winning event itself), viz. fn.2.

Yesterday, Anna went to her plastic surgeon. She had won the beauty contest 30 years ago. Now she {#replace^{OK}wanted to replace} her nose and upper lip. (19)

Yesterday, Anna went to her plastic surgeon. She had won the beauty contest 30 years ago. {#She was old and sick^{OK}Now she was old and sick}. (20)

In order to make sense of this proposal within the theory outlined in the previous two sections, consider the meaning for *now* below, in (21):

$$\text{Adv} [\text{now}_n] \rightsquigarrow \lambda Q \exists t \exists s [t = \tau(e_n) \wedge \text{CONS}(e_n) = s \wedge Q(s, t)] \quad (21)$$

According to the formula above, *now* has the same semantic type and uses the same ingredients as other temporal location adverbs. In particular, it supplies a time input that is related to a salient event e_n that serves as the perspectival event. In this way, *now* is on a par with *the day before* viz. (15). It differs, however, in that it requires the supplied time input to be identified with (rather than precede) the run time of the perspectival event (viz. the condition $t = \tau(e_n)$). As will be shown below, this difference is what makes *now* compatible with both the present and the past tense.

Like all other location adverbs, *now* also supplies a state input. However, unlike other adverbs, it relates this state to the perspectival event. In particular, it requires the supplied state input to be a consequent state of the perspectival event (viz. the condition $\text{CONS}(e_n) = s$). In this way, both inputs supplied by *now* play a crucial role in fixing the temporal location of an eventuality described by AspP.⁵ In particular, the relations $t = \tau(e_n)$ and $\text{CONS}(e_n) = s$ encoded by *now* entail that an eventuality described by AspP holds throughout the perspectival event as desired. Such is the case because—given the analysis sketched out in the previous section— t and s are the inputs relative to which an eventuality described by AspP is located. In particular, events described by AspP are required to hold within these inputs, while states are

⁵ Arguably the same can be said for the phrase *at the same time* and presumably others (cf. [9]).

required to hold throughout them. This leads to contradiction with eventive sentences, but not with stative sentences. That is, it follows from (21), (22) and (24) that the nose replacing event is contained within two non-overlapping eventualities—i.e. the perspectival event and its consequent state—thereby explaining the ungrammaticality of (19) with *replaced*. On the other hand, it follows from (21), (22) and (25) that a state of being sick held throughout the perspectival event as desired. In this way, we explain *now*'s affinity for stative sentences.

$$T \text{ [PST]} \rightsquigarrow \lambda Q \lambda s \lambda t [t < \tau(e_0) \wedge Q(s, t)] \quad (22)$$

$$T \text{ [PRS]} \rightsquigarrow \lambda Q \lambda s \lambda t [t = \tau(e_0) \wedge Q(s, t)] \quad (23)$$

$$\begin{aligned} \text{AspP [she replace her nose]} &\rightsquigarrow & (24) \\ \lambda s \lambda t \exists e [\tau(e) \subseteq t \wedge \tau(e) \subseteq \tau(s) \wedge \text{replace.her.nose}(she, e)] & \end{aligned}$$

$$\begin{aligned} \text{AspP [Anna be sick]} &\rightsquigarrow & (25) \\ \lambda s' \lambda t \exists s [t \subseteq \tau(s) \wedge \tau(s') \subseteq \tau(s) \wedge \text{be.sick}(anna, s)] & \end{aligned}$$

The proposed analysis not only accounts for *now* in contexts where it co-occurs with the past tense, but it also accounts for the seemingly deictic use of *now* in examples like (26). Here we see *now* appearing discourse initially and co-occurring with the present tense; it makes reference to the time at which it is uttered.

$$\text{Anna is sick now.} \quad (26)$$

This is just one way in which *now* is used in a discourse; its seemingly deictic behavior in (26) comes from the present tense, which identifies the run time of the speech event with the time introduced by *now*, which in turn is identified with the perspectival event. For this reason it follows from (21), (23) and (25) that the state of being sick described in (26) holds throughout the speech event as desired.

5 Conclusion

I end this paper by mentioning two challenges that it faces. I begin with Hans Kamp's example in (27), which entails that an earthquake is taking place at the speech event. What is interesting about this example is that there is no present tense in the sentence and the aforementioned entailment disappears without *now*.

$$\text{I learned last week that there would now be an earthquake ([14], pp. 299).} \quad (27)$$

Given the analysis proposed here, one could say that the perspectival event in (27) must be the speech event because it is compatible with the semantics of *would* and there is no other possible antecedent; the learning event described by the matrix clause is presumably ruled out because *would* requires the earthquake to follow this event. In other words, the idea is that *now* is compatible with a *present* or a *past* perspectival event and—if no grammatical elements (viz. the present tense) indicate otherwise—*independent* rules of anaphora resolution determine which one is chosen.

Another challenge for the proposed analysis concerns the behavior of other temporal location adverbs that appear to ‘lose’ their deictic characteristics in FID analogous to *now*. For example, consider *tomorrow* in (28), where it does not refer to a day after the speech event (see [1] for examples involving other adverbs).

Tomorrow was Monday, Monday, the beginning of another school week! (28)
(Lawrence, *Women in Love*, pp. 185; cited in [29])

Given the proposed analysis, there are two avenues to pursue: (i) like *now*, *tomorrow* is an anaphor or (ii) an FID operator is responsible for shifting *tomorrow*’s coordinates in (28). In its extreme, (i) leads to the perhaps undesirable claim that many (if not all) adverb expressions that are typically thought to be deictic are really anaphoric. The less radical view in (ii), on the other hand, suggests that an FID operator is also at play when *now* occurs in FID. If that’s right, then the effects of this operator are truth-conditionally undetectable given *now*’s proposed semantics.

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