

Non-Indexical Uses of ‘Now’ with Subordinate Clauses

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Intro: Since Kamp & Reyle 1993, attempts have been made to provide a uniform semantics of *now* which captures its indexical (deictic and anaphoric) uses (e.g. Lee & Choi 2009, Hunter 2010, 2012; Altshuler 2009, 2016; Altshuler & Stojnić 2015, Ritz & Schultze-Berndt 2015). In this talk, we consider novel data in which *now* takes a subordinate complement clause. Building on Altshuler & Stojnić 2015 and Altshuler 2016 (henceforth: Altshuler *et al*), we propose that in its basic form *now* has the type of a determiner, combining with two clauses (understood event-theoretically as denoting descriptors) and constraining the reference time of the main clause relative to the run time of eventualities satisfying the subordinate clause. In such constructions, *now* is non-indexical. We then show how our analysis can recover indexical uses of *now* in which it lacks a subordinate clause and situate it in relation to a broader class of ‘temporal’ determiners.

Background: Kamp (1971) cites (1) in arguing that *now* is a pure indexical and identifies the reference time with the speech time. However, as observed by Dry (1979), Kamp & Reyle (1993), Hunter (2010) and many others, in sentences like (2), *now* occurs in past tense and has an anaphoric usage. Based on these data, Altshuler *et al* propose that the semantic contribution of *now* can be paraphrased as: “with this having happened”, where “this” can be an event described in prior discourse or the speech event. This intuition is cashed out by proposing that *now* takes a prominent event *e* (along with its final state) as its antecedent(s). It requires the onset of the eventuality described in its complement clause to occur during the final state of *e*. So, in (2), the stirring event introduced in the *now*-sentence must start at a time within the final state of the sautéing event. In contrast, in deictic uses such as (1), the speech event serves as the prominent event, and the embedded complement clause is evaluated at a time included within its final state.

- (1) I learned last week that there would now be an earthquake. (Kamp, 1971, p. 229).
- (2) John finished sautéing the onions. Now he stirred in the wine and mushrooms.

Complement-taking uses: As demonstrated by (3)/(4) below, *now* is capable of taking a subordinate clause as a complement, which may occur either pre- or post-posed. In such constructions, the eventuality satisfying the main clause is required to start during the run-time of the state satisfying the subordinate clause. Thus, for example, (3)/(4) asserts that the onset of the state of being able to see the summit is included within the run-time of the final state of the clouds clearing. The effect of *now* on the reference time of the main clause in (3)/(4) is independent of context and determined entirely by its subordinate clause. As such, we term such constructions ‘non-indexical’ uses of *now*. Nevertheless, the discourse (5), in which *now* functions anaphorically, is extremely close in meaning to (3)/(4). This suggests that: (i.) a unified account of *now* in uses both with and without a subordinate clause is desirable; and (ii.) the same content contributed by the subordinate clause in (3)/(4) is instead supplied anaphorically in (5).

- (3) Now that the clouds had cleared, Liza could see the summit.
- (4) Liza could see summit, now that the clouds had cleared.
- (5) The clouds had cleared. Now Liza could see the summit.

Stativity & Projection: First, we note that the subordinate clause of non-indexical uses of *now* is not-at-issue, and projects from embedded contexts.

- (6) a. Is Jean-Paul happier, now that he’s rich? ⇒ Jean-Paul is rich.
- b. Jean-Paul might be happier now that he’s rich. ⇒ Jean-Paul is rich.

Second, we note that the subordinate clause position of such constructions selects for stative clauses. Whereas (7) is felicitous with the past perfect, the simple-past subordinate clause is infelicitous. Finally, while stative verbs (such as ‘enjoy’) can occur felicitously in the simple past subordinate clauses (as in (8)), the same clauses cannot function as antecedents for the anaphoric use of *now* (as in (9)).

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- (7) Now that Mary [??bought/had bought] a memory foam mattress, she could sleep far more comfortably.
- (8) Now that Uri enjoyed his job, he looked forward to going to work.
- (9) Uri enjoyed his job. ??Now he looked forward to going to work

Analysis: In an event-theoretic framework, the denotation of a clause prior to existential closure will be a descriptor (i.e. a property of eventualities). We propose that the subordinate-clause taking use of *now* is basic, and that it has the type of a determiner (i.e. $\langle \langle \alpha t \rangle \langle \alpha t \rangle t \rangle$). The denotation of *now* combines with two descriptors, P and Q , and presupposes that P holds of some state in the domain, viz. (6). Moreover, it asserts that Q is instantiated by some eventuality which starts during the run-time of the state instantiating P . Finally, in line with Altshuler *et al.*, *now* introduces a presupposition (treated as domain restriction) that the state instantiating P is the final state of some event (i.e., has an onset time). In non-indexical constructions, the subordinate clause supplies the first argument. In indexical constructions, such as (1)-(2), which lack an overt subordinate clause, we posit a covert type shifter $\emptyset_{\text{DET} \rightarrow Q}$. $\emptyset_{\text{DET} \rightarrow Q}$ maps a determiner to a generalised quantifier, by applying it to the trivial property $(\lambda v. v = v)$. As such, the resulting expression takes only a single clausal argument. We present evidence for the overt realisation of this type-shifter with other temporal determiners below.

- (10) $\llbracket \text{Now} \rrbracket = \lambda P: P(j) \wedge \text{FINALSTATE}(e)=(j) . \lambda Q. (\neg \exists i \in \tau(v) \forall t' \in \tau(j) i < t') \wedge Q(v).$
- (11) $\llbracket \emptyset_{\text{DET} \rightarrow Q} \rrbracket = \lambda \Pi \lambda P: \Pi(\lambda v. v = v)(P).$

The contrast between (8) and (9) is explained by the assumption that in non-indexical (but not indexical) constructions, the event and state variables undergo existential closure within the domain restriction. Thus, (8) presupposes the existence of an event which has Uri enjoying his job as its final state. In contrast, in (9), the event and state-variables remain free and hence requires that the discourse provides values for them in the form of antecedents for cross-sentential anaphora. The contrast in felicity is then explained as an instance of the more general contrast between the ease of accommodation of presuppositions in comparison to antecedents. In both cases, we assume that the eventuality variable v is existentially closed at sentence-level.

Comparisons: We posit that *now* belongs to a sub-class of temporal determiners such as *while* and *after/before*, all of which take a subordinate clause. Like *now*, such expressions fix the onset time of the eventuality in their main clauses in relation to the run-time of the eventuality described in their subordinate clauses (as exemplified in (12)/(13)).

- (12) Now that Jo had hung up the decorations, Ada inflated the balloons.
- (13) While/after/before Jo hung up the decorations, Ada inflated the balloons.

In contrast *now*, *while/after/before* all lack an indexical use. However, we observe that each possesses a morphologically related expression which plays a role directly analogous to anaphoric uses of *now* (e.g., *mean-while*; *after-wards*; *before-hand*):

- (14) Jo hung up the decorations. Meanwhile/beforehand/afterwards Ada inflated the balloons.

We propose that the morphemes *mean-/ -hand/ -wards* in (14) have the same meaning specified in (11), and are overt realisations of the covert type-shifter $\emptyset_{\text{DET} \rightarrow Q}$ which transforms a determiner into a generalized quantifier. This provides further evidence for treating subordinate-clause taking use of *now* as basic, and deriving the indexical use via type-shifting.

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