‘Now’ as a dyadic connective
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Intro: Since Kamp & Reyle 1993, attempts have been made to provide a uniform semantics of now which captures its indexical 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 clause. Building on Altshuler & Stojnić 2015 and Altshuler 2016 (henceforth: Altshuler et al), we propose that now is a determiner, relating two descriptors P and Q and requiring Q to be instantiated by some eventuality which starts during the run time of P. We then situate our treatment of now within a wider taxonomy of temporal modifiers taking subordinate clauses.

Background: Kamp (1971) used (1) below to argue that now is a pure indexical. However, as observed by Dry (1979), Kamp & Reyle (1993), Hunter (2010) and many others, now often has an anaphoric usage, viz. (2). Moreover, as shown in (3), now naturally occurs with will to open a discourse, but not with the past tense. 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 by saying 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. On this analysis, the now-sentence in (2) is evaluated at a time within the final state of the comrade-finding event. The will-sentence in (3) and subordinate clause in (1) are evaluated at a time included within the final state of the speech event. In contrast, the past version in (3) is bad since the only possible antecedent, the speech event, is incompatible with past tense.

(1) I learned last week that there would now be an earthquake. (Kamp, 1971, p. 229).
(2) In many a place visited after several months of absence, I found comrades whom I knew well: now they looked pale, thin and visibly weakened.
(3) I [will now introduce you/#now introduced you] to the teacher. (Altshuler 2016).

Complement-taking uses: In (4), below, the eventuality described in main clause is required to start during state denoted by the subordinate clause. That is, (4) asserts that the start of the acute positive pleasure state is included within the run time of the state of the animals having sole possession of their food. As such, (4) is equivalent to the anaphoric example in (5). This observation is both novel and significant. We note that a key component of Hunter’s (2010) and Altshuler et al’s analyses is that rhetorical relations determine the antecedent event of now in examples like (6). (4) suggests that now’s antecedent eventuality can also be lexically supplied by an overt complement clause. Furthermore, we note that the subordinate clause must be stative. Whereas (6) is felicitous with the pluperfect, the simple-past counterpart is infelicitous. Finally, while stative verbs (such as ‘enjoy’) can occur felicitously in the simple past subordinate clauses (viz. (7)), the same clauses cannot function as antecedents for the anaphoric use of now (viz. (8)).

(4) The animals were happy as they had never conceived it possible to be. Every mouthful of food was an acute positive pleasure, now that it was truly their own food.
(5) The animals were happy as they had never conceived it possible to be. The food was truly their own. Now every mouthful of food was an acute positive pleasure.
(6) Now that Mary [??bought/had bought] a memory foam mattress, she could sleep far more comfortably.
(7) Now that Uri enjoyed his job, he looked forward to going to work.
(8) Uri enjoyed his job. ??Now he looked forward to going to work.

Analysis: We propose that now combines with two descriptors, P and Q (understood as properties of eventualities), and presupposes that P holds of some state in the domain, viz. (9). Moreover, it asserts that Q is instantiated by some eventuality which starts during the state instantiating P.
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Finally, in line with Altshuler et al., now introduces a presupposition (understood as domain restriction) that the state instantiating \( P \) is the final state of some prominent event. Where now takes a subordinate clause, the eventuality described in the main clause is required to start during the run-time of satisfying the descriptor in the subordinate clause. Where it lacks an overt subordinate clause, we posit a null type-shifter \( (\lambda P: \Pi (\lambda v. v=v)(P)) \) which maps a determiner to a generalised quantifier. This type-shifter is argued to be overtly realised by affixes such as ‘mean-’ in their interaction with ‘while’ (see discussion below).

\[
\text{Now} = \lambda P: P(s) \land \text{FinalState}(e)=s, \lambda Q. \ (\neg \exists t \in \tau(v) \ \forall t' \in \tau(s) \ t<t') \land Q(v).
\]

The contrast in (6) is explained by requiring that the descriptor derived from the subordinate clause is applied to a state-denoting variable. The contrast between (7) and (8) is explained by the assumption that in subordinate-clause taking (but not anaphoric) constructions, the event and state variables undergo existential closure. Thus, whereas (7) presupposes the existence of an event its final state, (8) requires that the discourse provides them as 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 for anaphors.

**Bound uses:** Our analysis is compatible with readings, such as (10) and (11), on which now exhibits a bound reading under the scope of a quantifier:

\begin{align*}
(10) & \quad \text{Every artist reaches that point when she is now ready to begin her masterpiece. (Altshuler and Stojnić 2015)} \\
(11) & \quad \text{Every book released in paperback will undergo an increase in sales now that it’s available at a cheaper price.}
\end{align*}

For example, under a bound reading (11) requires that for each paperback book the time at which it undergoes an increase in sales coincides with its availability at a cheaper price.

**Comparisons:** We posit that now belongs to a sub-class of temporal connectives such as while and when, which require start of the eventuality in their main clauses to occur during the run-time of the eventuality described in their subordinate clauses.

\begin{align*}
(12) & \quad \text{Now that John was in London, Mary threw a party.} \\
(13) & \quad \text{While/when John was in London, Mary threw a party.}
\end{align*}

However, unlike now, while/when presuppose that the state in the subordinate clause of (13) culminates in some later event. Whereas (12) entails that at some prominent prior time John was not in London, (13) entails that at some prominent later time, John would cease to be in London. Furthermore, we observe that now (but not while/when) carries an implicature that the eventuality introduced by the main clause is causally dependent upon some eventuality introduced by the subordinate clause. Unlike (13), (12) implicates that Mary threw a party because John arrived in London. The reason for this is that now presupposes the existence of an event which culminates in the state denoted by ‘John was in London’. This event then facilitates a causal rhetorical relation in (12) (but not (13)) with respect to the main clause eventuality. Finally, while, e.g., ‘while’ lacks an anaphoric use in which it takes a single clausal complement, we note the existence of the morphologically derived ‘meanwhile’ which occupies this role.

\begin{align*}
(14) & \quad \text{John was in London. Meanwhile, Mary threw a party.}
\end{align*}

Ascribing ‘mean-’ the same meaning as the null type-shifting morpheme posited above allows us to derive such constructions compositionally (we also discuss parallel constructions with ‘before(-hand)’ and ‘after(-wards)’).


