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Temporal properties of noun phrases

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Abstract: This case explores temporal properties of noun phrases cross-linguistically. One property is that noun phrases are temporally interpreted at times that are contextually salient, such as utterance or topic times. Whether the denotation of the noun phrase is contextually established also influences its temporal interpretation. A comparison of the temporal interpretation of noun phrases and finite verbs reveals parallels (e.g., temporal anaphora play a role in both domains) as well as differences (e.g., in English, tense must constrain the temporal interpretation of finite verbs but not of noun phrases). Another property is that there is a rich array of temporal, aspectual and modal expressions in the nominal domain, as in the verbal domain. A preliminary taxonomy of the meanings of these expressions is developed. A final property is that the meanings of nouns have implications for the temporal properties of the noun phrases in which they occur.

Keywords: Temporal interpretation, nouns, noun phrases, topic time, nominal tense, nominal aspect, nominal modality

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1 Central questions about temporal properties of noun phrases

Human languages allow their speakers to communicate states of affairs that have already occurred or have yet to occur. This property, which Hockett (1960) called 'displacement', has been studied extensively across a wide range of languages (e.g., Comrie 1976, 1985; Dahl 1985; Binnick 1991; Tonhauser 2015), but it has been studied primarily for states of affairs conveyed by (finite and non-finite) verbs. Noun phrases like *most scientist* or *the fugitive*, however, may also convey information about past, present or future states of affairs. For instance, (1), when uttered out of the blue, is taken to express not only the state of affairs that most of the entities quantified over are unmarried at the utterance time but also the state of affairs that the relevant entities are scientists at the utterance time.

(1) Most scientists are unmarried. (Musan 1997:87)

Thus, when uttered out of the blue, the example in (1) is true if and only if most entities that are scientists at the utterance time are unmarried at the utterance time.

Importantly, the noun phrases of a sentence are not always interpreted at the same time as the finite verb, as Enç's (1981) famous example in (2) illustrates:

(2) Every fugitive is now in jail. (Enç 1981:38)

On a salient interpretation, (2) is true if and only if every entity that was a fugitive at a time prior to the utterance time is in jail at the utterance time. The examples in (1) and (2) illustrate that the noun phrase of a sentence may but need not be temporally interpreted at the same time as the finite verb. This observation gives rise to the question of how noun phrases are temporally interpreted. In this case, this question is addressed as part of an exploration of temporal properties of noun phrases. We start in section 2 by examining whether and how tense, context and noun phrase type influence the temporal interpretation of noun phrases. Section 3 discusses how the temporal interpretation of nouns and noun phrases is like or unlike the (better-studied) temporal interpretation of finite verbs and the sentences they head, and how noun phrase-internal temporal, aspectual and modal expressions contribute to the interpretation of noun phrases. Section 4 reviews the contributions of different types of nouns to the temporal properties of noun phrases. The case concludes in section 5 with a summary of open research questions.

2 The temporal location of the noun phrase time

This section explores whether and how tense on finite verbs, context and noun phrase type influence the temporal interpretation of noun phrases. The section follows the literature chronologically, from Montague 1973 via Enç 1981, 1986 and Musan 1997, 1999 to Tonhauser 2002, 2006. To facilitate the exploration (and for reasons addressed in section 3.2), the terminology used in this section follows that in Tonhauser 2007, 2008. In particular, the time at which a noun phrase is temporally interpreted is referred to as its 'noun phrase time'. Furthermore, we follow Klein (1994) in referring to the time that the sentence is about and at which the finite verb is temporally interpreted as the 'topic time'. Thus, the question raised in section 1 is whether the noun phrase time of a noun phrase is the topic time, as for (1), or a different time, as for (2) and, if so, which time.

2.1 Tense on finite verbs

In Montague Grammar (e.g., Montague 1973), the tense marking on the finite verb of a sentence (e.g., present tense in (1) and (2)) was analyzed as an operator that had scope over the entire sentence. As shown in the rules for the translations of past and present tense in (3i) and (3ii), respectively, the past tense operator

P introduces a time t' that temporally precedes the evaluation time t ($t' \prec t$) and the future tense operator F introduces a time t' that temporally follows the evaluation time t ($t \prec t'$). In matrix clauses, the evaluation time is the utterance time.

(3) Where ϕ is a sentence, P is Past and F is Future,
   i. P(ϕ) is true at time t iff there is a time t' such that ϕ is true at t' and $t' \prec t$,
   ii. F(ϕ) is true at time t iff there is a time t' such that ϕ is true at t' and $t \prec t'$. (Enç 1986:406)

As discussed in detail by Enç (1981, 1986), a consequence of analyzing tense as a sentential operator is that tense influences the temporal interpretation of a noun phrase in its scope; or, using the terminology introduced above, a consequence is that tense temporally locates the noun phrase time of a noun phrase in its scope. The example in (4), for instance, has two translations: in (4a), but not in (4b), the translation of the noun phrase *the president* is in the scope of the past tense operator P. (A Russellian analysis of the definite noun phrase is assumed here for ease of exposition.)

(4) The president was a fool. (Enç 1986:405)
   a. $\mathrm{P}(\exists x((president'(x) \wedge \forall y(president'(y) \rightarrow y = x)) \wedge be.a.fool'(x)))$
   b. $\exists x((president'(x) \wedge \forall y(president'(y) \rightarrow y = x)) \wedge \mathrm{P}(be.a.fool'(x)))$

The sentence in (4) is thereby predicted to have two interpretations. According to (4a), the sentence is true if and only if there is a time t' prior to the evaluation time t such that the president at t' was a fool at t'. On this interpretation, the noun phrase time is the topic time. According to (4b), on the other hand, the sentence is true if and only if the president at the evaluation time t was a fool at a time t' prior to t. Here, the noun phrase time temporally follows the topic time. Attributing two interpretations to (4) is empirically adequate because the sentence "is taken to be ambiguous, depending on whether we are talking about a past president or the present president" (Enç 1986:405).

However, Enç (1981:ch.2) identified several problems of the analysis of tense as a sentential operator for the temporal interpretation of noun phrases (see also Enç 1986). One is that noun phrase times may be temporally located at a time that is neither the time introduced by the tense operator nor the evaluation time. Consider example (2) *Every fugitive is now in jail*. Because there is no past tense operator, the analysis only predicts an interpretation on which the noun phrase time is identical to the evaluation/topic time. Problems like this one ultimately led Enç (1981, 1986) to conclude that the temporal location of the noun phrase time is independent of the time introduced by tense, the topic time.

2.2 Context

Enç (1981, 1986) argued that the temporal interpretation of noun phrases is determined by context: "[t]here does not seem to be any need for any constraints on the temporal arguments of nouns beyond the pragmatic ones" (Enç 1986:422f.). More specifically, noun phrase times are times that "have been introduced into the domain of discourse previously, by tenses and temporal adverbs" (*ibid*). Since speakers have an interest in listeners being able to identify the intended denotation of the noun phrase, speakers will choose a noun phrase with a noun whose property is either always true of the relevant entities (a permanent property) or a temporary property that is true of the relevant entities at a contextually salient time:

> "In general, NP's are used to pick out objects and VP's are used to predicate something of these objects. The property a speaker chooses to pick out the objects is important in that it must enable the other participants in the discourse to access the objects easily. Therefore, these properties tend to be permanent properties or salient temporary properties." (Enç 1981:51)

According to Enç's proposal, the noun phrase time of the noun phrase *most scientists* in the decontextualized example in (1) *Most scientists are unmarried* is the utterance time because no other salient times have been introduced at which the relevant individuals are scientists. Enç's proposal also leads us to expect that the noun phrase time of the noun phrase *every fugitive* in (2) *Every fugitive is now in jail* can be a past time "only if such a time was previously introduced into the domain of discourse, i.e., if it is pragmatically recoverable" (Enç 1986:423). In the context for (2) in (5), a past time at which the relevant individuals are fugitives is introduced in the first two sentences of the context:

(5) Context: Some prisoners escaped from a prison last week. The media followed the escaped prisoners throughout the week, reporting daily on their sightings in various cities. Finally, a news reporter comes on and says:
Every fugitive is now in jail. (Tonhauser 2006:92)

The noun phrase time also seems to be able to be introduced into the domain of discourse by reasoning about lexical meaning and world knowledge. Recall that the interpretation of (2) illustrated with (5) was also taken to be salient when the example was introduced in section 1 without a context. The reason is that the noun *fugitive* and the verb phrase *be in jail* denote properties of entities that, according to our world knowledge, can be taken to be incompatible: for example, when somebody escapes from jail, they become a fugitive, and they cease to be a fugitive when they are back in jail. Thus, the lexical meaning of the noun and the verb phrase, together with reasoning about a plausible context in which the example in (2) could be used, may result in an interpretation according to which the noun phrase time precedes the topic time.

2.3 Noun phrase type

Enç's proposal was challenged by Musan (1997, 1999), who argued that there are types of noun phrases that must be temporally interpreted at the time of the verb, regardless of context – or, in the terminology used here, that there are noun phrases whose noun phrase time must be the topic time. Consider the noun phrase *many fugitives* in the examples in (6). Musan argued that, in (6a), the noun phrase may be temporally interpreted at various times, but that when the same noun phrase is realized as the pivot of an existential construction, as in (6b), it must be temporally interpreted at the topic time: "the individuals mentioned in [(6b)] have to be fugitives now" (Musan 1997:3).

(6) a. Many fugitives are now in jail.
b. There are now many fugitives in jail. (Musan 1997:3)

Thus, according to Musan (1997:55), "Enç's (1981) account overgeneralizes" because it does not capture that some types of noun phrases, including pivots of existential constructions, must be interpreted at the topic time.

Musan relied on Milsark's (1974) distinction between 'strong' and 'weak' determiners to characterize the types of noun phrases that must be temporally interpreted at the topic time. Strong determiners are determiners like *all, every, each* and *most*, which may not occur in the existential construction (e.g., **There are all/every/most dogs in the garden*). Weak determiners like *many, some, five* and *few* may occur in the existential construction (e.g., *There are five/some/few dogs in the garden*); for discussion, see the case 'Strong and weak nominals'. According to Musan (1997:143), noun phrases that must be temporally interpreted at the topic time are those "with weak determiners in certain syntactic positions", like the pivot of existential constructions, as in (6b) and (7a), the predicative position, as in (7b), and the unscrambled VP-internal position in German, as in (7c), as well as "existential bare plural noun phrases", as in (7d), and noun phrases "with weak determiners that are stressed on the noun", as in (7e).

(7) a. There were **many homeless people** at the rally. (Musan 1997:60)

b. Anne is **a student of French literature**. (Musan 1997:60)

c. weil letztes Jahr **viele Studenten** krank waren.
because last year many students sick were
'because many students were sick last year.' (Musan 1999:641, translation added)

d. In den sechziger Jahren waren ja doch **Professoren** glücklich.
in the sixties years were indeed professors happy
'In the sixties, [some] professors were (indeed) happy.' (Musan 1997:58)

e. **Einige PROFESSOREN** waren in den sechziger Jahren glücklich.
some professors were in the sixties years happy
'Sm professors were happy in the sixties.' (Musan 1997:58, glosses adapted)

In Musan 1999, the set of noun phrases that must be temporally interpreted at the topic time, which she called 'nonpresuppositional' noun phrases, was slightly revised. First, Musan (1999) noted that unscrambled weak noun phrases in German only "tend to be" temporally interpreted at the time of the verb (p.642) and she excluded existential bare plural noun phrases from consideration. Further, she suggested that noun phrases with stress on the noun are temporally interpreted at the topic time only if they have a rising accent on the noun: temporal interpretation at the topic time "only comes about reliably when the accent on the noun is a rising accent and not a falling accent. If there is a falling accent positioned on the noun, this leads to a narrow focus reading" (Musan 1999:629). In contrast to these nonpresuppositional noun phrases, noun phrases that may but need not be interpreted at the topic time are 'presuppositional'. Like Enç, Musan assumed that presuppositional noun phrases are interpreted at contextually salient times (see e.g. Musan 1997:ch.III.8, Musan 1999:627f.). Musan's proposal that some noun phrases must be temporally interpreted at the time of the verb has been widely adopted (see, e.g., Kusumoto 1999, 2005; Percus 2000; Romero and Bock 2001; Denis and Muller 2004; Keshet 2008, 2010).

It is undeniable that nonpresuppositional phrases seem to display a stronger tendency than presuppositional ones to be temporally interpreted at the topic time; see, for instance, the minimal pair in (6). However, as discussed in Tonhauser 2002, the claim that these noun phrases *must* be temporally interpreted at the topic time is too strong because there are counterexamples for each noun phrase type. For instance, the pivots of the existential constructions in (8) are not temporally interpreted at the topic time, and counterexamples involving generic bare plurals and for weak noun phrases that have a rising accent on the noun are given in (9a) and (9b), respectively.[1]

(8) a. Context: At a reunion of the survivors of the Titanic disaster.
Look, there are even **some crew members** here. (Tonhauser 2002:294)

b. The steel mill used to employ 800 people. But due to the layoffs last week, there are **200 mill employees** currently unemployed. (Keshet 2008:61)

(9) a. Context: A friend and I are attending a reunion of the survivors of the Titanic disaster. I say:
Look, **crew members** are here, too! (Tonhauser 2002:295)

b. Context: At a mass wedding, after the priest has joined the 500 couples. I say:
I bet 10 years ago most of the grooms weren't even thinking of getting married while **some BRIdes** were already getting measured for the dress. (Tonhauser 2002:302)

In sum, even though there is a tendency for nonpresuppositional noun phrases, defined by their determiner and syntactic position, to be temporally interpreted at the topic time (for suggestive evidence see also Romero and Bock 2001), Musan's claim that such noun phrases *must* be temporally interpreted at the topic time is not empirically adequate. As discussed in Tonhauser 2006, 2007, the times at which noun phrases are temporally interpreted in Paraguayan Guaraní (Tupí-Guaraní) are remarkably similar to the times at which English and German noun phrases are temporally interpreted.

In Musan 1999, nonpresuppositional and presuppositional noun phrases were defined on the basis of their determiner and syntactic position, but also assumed to have distinct presuppositional properties: nonpresuppositional noun phrases were assumed to not introduce presuppositions concerning the individuals that have the property denoted by the noun (beyond Heim's 1982 novelty presuppositions), whereas presuppositional noun phrases were assumed to have denotations that are treated as established in the discourse model of the hearer.[2] Ultimately, Musan (1999) proposed that only presuppositional noun phrase can be temporally interpreted at a time other than the topic time because their denotation can be (treated as) contextually established. This proposal is captured in the generalization (10) (where an existence-independent argument is one to which the predicate can apply even if the lifetime of the denotation of the argument has ended; see Musan 1997:chs.3.2,3.3, Musan 1999:§3 and section 3.4.2 for further discussion).

(10) A noun phrase occurrence that does not realize an existence-independent argument of the main predicate is temporally independent [i.e., may but need not be temporally interpreted at the topic time; JT] if and only if it is treated as if it were established in the discourse model of the hearer. (Musan 1999:644)

The generalization in (10) is about noun phrase occurrences and relies on the meaning of the noun phrase in the context in which it occurs to determine whether it can be temporally interpreted at a time other than the topic time. Crucially, because the generalization is not about noun phrase types, as defined by determiners and syntactic positions, it resembles Enç's proposal, that a noun phrase can only be interpreted at a time that is salient for that noun phrase in the domain of discourse. It is unclear, however, whether the generalization in (10) is compatible with Musan's claim that nonpresuppositional noun phrases must be temporally interpreted at the topic time. In (8a) *Look, there are even some crew members here*, the noun phrase *some crew members* is nonpresuppositional, as defined by its determiner and syntactic position, but it is precisely because its denotation is contextually established that it can be temporally interpreted at a time other than then topic time (see also note 1). We return to the question of how the noun phrase time is determined in section 3.3.

2.4 Summary

A central question in research on temporal properties of noun phrases has been the question of how the temporal location of the noun phrase time is constrained. As reviewed in this section, it is insufficient to assume that the topic time and the utterance (or: evaluation) time are the only times at which a noun phrase can be temporally interpreted (section 2.1). Instead, noun phrases in English, German and Paraguayan Guaraní (the languages that this research has focused on) seem to be able to be interpretable at contextually salient times (section 2.2). These times include in particular the utterance and the topic time, but are not limited to them. And although Musan's nonpresuppositional noun phrases, as defined by their determiners and syntactic positions, seem favor an interpretation at the topic time, they are not categorically interpreted at the topic time (section 2.3). To further explore how noun phrases are temporally interpreted, the next section compares the temporal interpretation of noun phrases and finite verbs.

3 Comparing the temporal interpretation of noun phrases and finite verbs

This section compares the temporal interpretation of nouns and noun phrases to that of finite verbs and the sentences they head, and also explores the meanings of noun phrase-internal expressions with temporal, aspectual and modal meanings. This discussion is couched in the neo-Reichenbachian framework of temporal and aspectual interpretation, which is introduced in the next section.

3.1 The neo-Reichenbachian framework of temporal and aspectual interpretation

As mentioned in section 1, the temporal interpretation of finite verbs and the sentences they head has been studied across a variety of languages. One widely used framework for the study of temporal and aspectual interpretation is the neo-Reichenbachian framework developed in Klein 1994. In this framework, the temporal reference of an uttered matrix clause is characterized as the time the utterance is about, the 'topic time', which was already introduced above. This time is the time about which an assertion makes a statement, an interrogative asks a question, and an imperative issues a command (Bohnemeyer 2009:83). To illustrate, consider (11), adapted from Klein (1994:3f.):

(11) Context: A judge (J) is interrogating a witness (W) in court.
J: What did you notice when you looked into the room?
W: The light was on.

The judge's interrogative utterance fixes the topic time as the past time interval when the witness looked into the room. If the witness is a cooperative interlocutor who adheres to general conversational principles (Grice 1975), in particular the principle of making her utterance relevant to the current discourse goal, then her answer can be assumed to elaborate on what she noticed at this topic time, i.e., she asserts that the eventuality of the light being on (with 'eventuality' a cover term for states and events; Bach 1986) held at that topic time. The time at which an eventuality holds is called the eventuality time.

In the neo-Reichenbachian framework, matrix clause tenses are paradigmatic expressions that indicate a temporal relation between the topic time and the utterance time:[3] past tense conveys that the topic time precedes the utterance time, present tense conveys that they are identical, and future tense conveys that the utterance time precedes the topic time. The tenses of a particular language are in complementary distribution and are generally obligatory in finite clauses. Tenses are assumed to be part of a paradigm to distinguish them from temporal adverbials, which may also constrain the temporal relation between the topic time and the utterance time, but which are not paradigmatic or obligatory.[4] Grammatical aspect also plays a role in temporally situating the eventuality time of the eventuality described by the finite verb and its arguments. In the neo-Reichenbachian framework, aspect is analyzed as a relation between the topic time and the eventuality time. Consider B's responses to A's question in (12). When B utters a (past tense) progressive aspect sentence (as in B1), the event of her reading the newspaper is understood to have been ongoing at the topic time, the time at which A called; the progressive aspect encodes that the topic time is temporally included in the eventuality time. If, on the other hand, B utters a (past tense) perfect aspect sentence (as in B2), the event of her reading the newspaper is understood to have been completed at the topic time; the perfect aspect here conveys that the eventuality time temporally precedes the topic time (for a more general discussion of the perfect, see, e.g., Kiparsky 2002 and the case 'The perfect').

(12) A: What were you doing yesterday, when I called you?
B1: I was reading the newspaper.
B2: I had read the newspaper (and was about to take a shower).

The topic time and the eventuality time are conceptually distinct and also have different properties. Specifically, the topic time is a temporal anaphor, whereas the eventuality time is typically assumed to be existentially quantified (e.g., Partee 1984; Kamp and Reyle 1993; Klein 1994). Consider the translation of B's utterance in (12B1) in (13); for ease of exposition, the temporal properties of the noun phrase *the newspaper* are ignored.

(13) $(12\text{B1}) \Longrightarrow \exists t(read'(sp, n, t) \wedge t_{tt} \subseteq t \wedge t_{tt} \prec now)$

According to this translation, (12B1) is true if and only if there is an eventuality time t at which the speaker (sp) reads the newspaper (n), such that t temporally includes the topic time (t_{tt}), which temporally precedes the utterance time (now). The topic time t_{tt} is taken to be a temporal anaphor that is resolved to a contextually salient time; here, the time at which A called B. By contrast, the eventuality time is existentially quantified, thereby capturing that there is a time at which speaker read the newspaper. Nothing, however, is specified about when the eventuality time began or ended; it is only required to temporally include the topic time.

3.2 The nominal situation time

So far, our exploration of temporal properties of noun phrases has only considered the noun phrase time, defined as the time at which a noun phrase is temporally interpreted. That a second time needs to be considered becomes clear with examples like (14b), which is identical to (14a) except that the adjective *former* occurs in the noun phrase *many fugitives*.[5]

(14) a. There are now many fugitives in jail. (= (6b))
b. There are now many former fugitives in jail.

As discussed above, according to one set of truth conditions, (14a)/(6b) is true if and only if, at the utterance time, the entities quantified over are both fugitives and in jail. The noun phrase time, the time at which the noun phrase *many fugitives* is temporally interpreted, is the utterance time, which is also the topic time of the sentence. Following Tonhauser 2006, 2007, we take the 'nominal situation time' to be the time at which the property denoted by the noun *fugitive* is true of the relevant entities. In (14a), the nominal situation time of *fugitive* temporally overlaps with the noun phrase time: as a consequence, it is predicted that, for each entity quantified over, there is a time at which they are a fugitive and this time temporally overlaps with the utterance time. (For a comment on why the temporal relation between the noun phrase time and the nominal situation time is one of temporal overlap, and not one of temporal inclusion, see section 3.3.)

Distinguishing the noun phrase time and the nominal situation time of a noun phrase allows one to capture the meanings of noun phrase-internal temporal, aspectual and modal expressions, like *former* or Paraguayan Guaraní *–kue* (Tonhauser 2006, 2007), which is discussed in the next section. On a salient interpretation, (14b) is true if and only if, at the utterance time, the entities quantified over are both former fugitives and in jail. Thus, the noun phrase time of the noun phrase *many former fugitives* is the utterance/topic time. The contribution of the temporal adjective *former* is to modify the temporal relation between the noun phrase time and the nominal situation time: instead of the nominal situation time temporally overlapping with the noun phrase time, as in (14a), *former* conveys that the nominal situation time temporally precedes the noun phrase time (Tonhauser 2006, 2007).

As just illustrated, the noun phrase time and the nominal situation time are two conceptually distinct times: one is the time at which a noun phrase is temporally interpreted, and the other is the time at which the property denoted by the noun is true of the entities denoted by the noun phrase. Both times are needed to capture the meaning of the modifier *former* and, as we will see in section 3.4, the meanings of other noun phrase-internal temporal, aspectual and modal expressions. By contrast, only one time was assumed in Enç 1981, 1986 and Musan 1997, 1999: the one time assumed in Enç 1986 seems play the role of both the nominal situation time and the noun phrase time (see, e.g., pp.422f.); the one time assumed in Musan 1999 is a (possibly nonproper) subset of the nominal situation time (p.623).

Distinguishing the noun phrase time and the nominal situation time also facilitates comparison of the temporal interpretation of noun phrases and finite verbs in the neo-Reichenbachian framework. One parallel is that it makes sense to assume that the nominal situation time is existentially bound, like the eventuality time, as shown in the translations of (14) in (15). The two translations differ only in the framed conjuncts in the restrictions of the quantifier *many*; (15b) ignores any contributions of the existential construction to meaning.

(15) a. (14a) $\Longrightarrow$ $many_x(\exists t_{nom}(fugitive'(x, t_{nom}) \wedge \boxed{t_{nom} \bigcirc t_{np}} \wedge t_{np} = now))$
$(\exists t'(in.jail'(x, t') \wedge t_{tt} \subseteq t' \wedge t_{tt} = now))$

b. (14b) $\Longrightarrow$ $many_x(\exists t_{nom}(fugitive'(x, t_{nom}) \wedge \boxed{t_{nom} \prec t_{np}} \wedge t_{np} = now))$
$(\exists t'(in.jail'(x, t') \wedge t_{tt} \subseteq t' \wedge t_{tt} = now))$

According to the translation in (15a), (14a) is true if and only if many individuals for whom there is a (nominal situation) time t_{nom} at which they are fugitives, where t_{nom} temporally overlaps with the noun phrase time t_{np}, which is the utterance time, are such that they are in jail at the (eventuality) time t', which includes the topic time t_{tt}, which is the utterance time. Both the nominal situation time and the eventuality time are existentially bound and thereby capture that the relevant individuals are fugitives and in jail at the utterance time (but not exactly when they are fugitives and in jail). The translation in (15b) only differs in that the nominal situation time t_{nom} does not temporally overlap with the utterance/noun phrase time, but temporally precedes it, thereby capturing that, for each individual, there is a time before the utterance/noun phrase time at which s/he was a fugitive. For the position that the intensional arguments of nominal and verbal predicates should not receive the same analysis see, e.g., Percus 2000 and Kusumoto 2005.

The next section reveals another parallel between the temporal interpretation of noun phrases and finite verbs, namely that the noun phrase time is a temporal anaphor, like the topic time.

3.3 The noun phrase time as a temporal anaphor

The interpretation of a temporal anaphor is contextually determined, and deictic, discourse anaphoric and bound interpretations are generally distinguished (see, e.g., Partee 1984, 1989; Condoravdi and Gawron 1996). These three interpretations are illustrated for the topic times of the sentences with bold-faced finite verbs in (16); the examples are adapted from Partee 1984, 1989. In all three sentences, the topic time is a past time, thereby compatible with the past tense marking on the verbs. In (16a), the topic time is anaphoric to a time given in the utterance situation, presumably the time when the speaker and her companion left the house. In (16b), the antecedent of the past topic time is the time introduced by the first sentence, namely the time at which Mary woke up during the night. Finally, in (16c), the topic times are the times in the domain of quantification of the *whenever*-clause.

(16) a. Context: The speaker and a companion are driving down the turn pike.
I **didn't** turn off the stove! [deictic]

b. Mary woke up sometime in the night. She **turned** on the light. [discourse anaphoric]

c. Whenever Mary telephoned, Sam **was** asleep. [bound]

The examples in (17) show that the three interpretations are also available for noun phrase times (as discussed in Tonhauser ms.). First, the (bold-faced) noun phrases in (17a-b) receive deictic interpretations: both noun phrases are temporally interpreted at the utterance time (not the past topic times of the relevant sentences). Next, the noun phrases in (17c-d) receive discourse anaphoric interpretations: both noun phrases are temporally interpreted at times introduced in the first sentences of the examples; those times are again distinct from the topic times of the sentences in which the bold-faced noun phrases occur. The examples in (17c-d) also show that De Cuyper's (2005:39) claim that noun phrases can only be temporally interpreted at the utterance time, the topic time or the eventuality time is incorrect. Finally, the noun phrase times of the bold-faced noun phrases in the examples in (17e-f) are resolved to the times quantified over by the *whenever*-modifier: in (17e), for instance, the relevant entities are guests at the times at which Peter hosted a party, not at the times at which they sued him.

(17) a. When I first met **my fiance**, I was with my ex-girlfriend. After we broke up I started dating him. (http://www.reddit.com/r/relationship_advice/comments/cy0pb/my_wedding_may_be_off_due_to_a_threesome_i_dont/)

b. The members of this department have many hidden qualities. **Some of the professors** were rock stars in the 1970s. (Tonhauser 2002:93)

c. Ten years ago, Sally got a new puppy during the summer I visited her. Yesterday, she and **her puppy dog** got on a plane to visit me.

d. In November, Mary sold raffle tickets at her art show. **No visitor** returned the following month to claim their prize.

e. Whenever Peter hosted a birthday party for a friend last year, **some guest** sued him the next year.

f. Whenever an accident happened at this intersection between 2002 and 2005, **an onlooker** told all the gory details to the media the following day.

Example (17d) also shows why the temporal relation between the noun phrase time and the nominal situation time is, by default, one of temporal overlap, and not temporal inclusion. The noun phrase time of *no visitor* in (17d) is the time of the art show. Since the entities quantified over by *no visitor* may have visited the art show at distinct times, it is merely required that the time at which each individual was a visitor (the nominal situation time) temporally overlaps with the noun phrase time. See also Kusumoto 2005:342.

The fact that the noun phrase time can receive deictic, discourse anaphoric and bound interpretations already constitutes strong motivation to analyze it as a temporal anaphor, like the topic time. Further motivation comes from the observation that both the topic time and the noun phrase time can both receive donkey anaphoric interpretations. Such interpretations are characterized by the antecedent of an anaphor being introduced by an indefinite expression in a position where the expression cannot take scope over the anaphor. In (18a), the indefinite *a Friday* in the scope of the *whenever*-clause is the antecedent of the topic time of the matrix clause. In (18b), the noun phrase time of the noun phrase *an innocent bystander* is the time denoted by the noun phrase *a shooting* in the relative clause.

(18) a. Whenever Mary telephoned on a Friday, Sam **was** asleep. (Partee 1984:246)

b. Every policeman who was called to a shooting last year first interviewed **an innocent bystander**.

A consequence of analyzing the noun phrase time as a temporal anaphor is that the temporal interpretation of noun phrases is predicted to be context-dependent, as was motivated by Enç (1981, 1986) and Musan (1997, 1999), as discussed in section 2. Tonhauser (2002, 2006) proposed that the noun phrase time is resolved by default to the topic time, as the contextually most salient time, "unless the discourse context supports an alternative resolution" (Tonhauser 2006:89). This analysis correctly predicts that most noun phrases are temporally interpreted at the topic time and that noun phrases whose denotation is (treated as) contextually established can be temporally interpreted at a different time, as per Musan's (1999) generalization in (10). The analysis also predicts that tendencies for particular types of noun phrases to favor temporal interpretations at the topic time may arise from the discourse properties of such noun phrases (for discussion, see Tonhauser 2002:§2.2).

3.4 Noun phrase-internal temporal, aspectual and modal expressions

This section explores the meanings of noun phrase-internal expressions with temporal, aspectual and modal meanings, like the English adjective *former*. We start with the question of whether there are languages with nominal tenses, i.e., nominal expressions that are comparable to tense marking on finite verbs.

3.4.1 Are there nominal tenses?

Recall from section 2.2 that there are empirical issues with analyzing tense as a sentential operator. Enç (1981:ch.2.4, 1986) entertained the possibility that the translations of English sentences include tense operators with sub-sentential scope that influence only the temporal interpretation of the predicates in the noun phrase. Example (2) *Every fugitive is now in jail* could then be translated as in (19), where the past tense operator P introduces a time t' prior to the evaluation time t at which the noun *fugitive* is temporally interpreted.

(19) $\forall x(\mathrm{P}(fugitive'(x)) \rightarrow be.in.jail'(x))$ (adapted from Enç 1981:42)

According to (19), (2) is predicted to be true if and only if every individual who was a fugitive at a past time is at jail at the evaluation/utterance time. This interpretation of (2) is attested in the context in (5).

Enç (1981, 1986) ultimately rejected this analysis, for several reasons, among them the fact that English morphology does not provide empirical evidence for nominal tense. Are there nominal tenses in other languages? Over the past decades, many authors have responded to this question in the affirmative. Bach (1968:101), for instance, commented that in Potawatomi (Algonquian) "words corresponding to our nouns have tense".[6] Comrie (1985:13) likewise suggested that tense in Nuu-chah-nulth (Wakashan) can be expressed on non-verbal elements, including nouns. Other languages claimed to have nominal tense include Somali (Cushitic; e.g. Lecarme 1996, 2004), Halkomelem (Salish; e.g. Burton 1997; Galloway 1993; Wiltschko 2003), Movima (isolate, Bolivia; Haude 2004, 2006) and Paraguayan Guaraní (Nordlinger and Sadler 2004). For overviews of languages claimed to have nominal tense see Nordlinger and Sadler 2004 and Tonhauser 2007.

However, hardly any of the claims about a particular language having nominal tense are made in reference to a definition of the category 'nominal tense' or in the context of a discussion of why the expression is a nominal tense, as opposed to, e.g., a nominal aspect. Nordlinger and Sadler (2004) came closest to such a definition with their characterization of the set of nominal tense/aspect/mood (TAM) expressions:

(20) (i) Nouns (or other NP/DP constituents) show a distinction in one or more of the categories of tense, aspect, and mood, where these categories are standardly defined as they would be for verbs (e.g. Crystal 1997).

(ii) This TAM distinction is productive across the whole word class and not simply restricted to a small subset of forms.

(iii) The TAM distinction is not restricted to nominals functioning as predicates of verbless clauses but is encoded on arguments and/or adjunct NP/DPs in clauses headed by verbs.

(iv) The TAM marker is a morphological category of the nominal word class and cannot be treated as a syntactic clitic that merely attaches phonologically to the NP/DP.

(Nordlinger and Sadler 2004:779)

This characterization of nominal TAM expressions requires them to show a similar distribution and meaning as verbal ones, while also requiring them to be realized in the nominal domain. However, as discussed in detail in Tonhauser 2007, 2008, this characterization does not yet suffice in order to identify, for any given marker, whether it is a nominal tense or a nominal aspect. Consider, for instance, the Paraguayan Guaraní suffixes *–kue* and *–rã*, which Nordlinger and Sadler (2004) classify as a nominal past and future tense, respectively:[7]

(21) a. Juan peteĩ mbo'e-há-ra-**kue**.
Juan one teach-NMLZ-AG-NOM.TERM
'Juan is a former teacher.' (adapted from Tonhauser 2007:838)

b. Kuehe a-hecha peteĩ abogado-**rã**-me.
yesterday A1sg-see one lawyer-NOM.PROSP-at
'Yesterday I saw a future lawyer.' (adapted from Tonhauser 2007:839)

As suggested by the translations of the examples in (21), the meanings of Paraguayan Guaraní *–kue* and *–rã* are roughly comparable to those of the English adjectives *former* and *future*, respectively. It is unclear how Nordlinger and Sadler's (2004) characterization in (20) supports their claim that the two Paraguayan Guaraní expressions are nominal tenses rather than nominal aspects or nominal modals. Crystal (2008) characterized aspect as marking "the duration or type of temporal activity denoted by the verb" (p.38) and tense as marking "the time at which the action denoted by the verb took place" (p.497). The translations of *–kue* and *–rã* by English *former* and *future* might at first glance suggest that the Paraguayan Guaraní expressions are nominal tenses because they seem to temporally located some time, e.g., the nominal situation time. However, as shown in section 3.1, perfect aspect can also temporally locate eventualities in time; see also the terminative aspect found in languages like Yukatek (Mayan, Bohnemeyer 2002) or the prospective aspect, as in the English *be going to* construction. In short, 'temporal location in time' is not a sufficient criterion for determining the category of nominal TAM expressions.

Tonhauser (2006, 2007, 2008) argued that the question of whether an expression is a nominal tense must be addressed on the basis of a precise definition of the category 'nominal tense' and data that illustrates whether the distribution and meaning of the expression fits the definition. The definition assumed by Tonhauser, given in (22), requires that nominal tenses be similar in their distribution and meaning to verbal tenses.

(22) The category 'nominal tense' (abbreviated from Tonhauser 2008:337f.)
A nominal tense marker has (at least) the following properties:

a. The marker occurs on nominal expressions, and its meaning affects the noun phrase it occurs with.
b. The set of nominal tense markers of the language form a grammatical paradigm.
c. In those environments where nominal tense markers are required, the markers are realized with nominal expressions without regard to the semantics of the head noun.
d. The marker encodes a temporal relation between the noun phrase time and the utterance time (deictic tense), or between the noun phrase time and another contextually given perspective time (relative nominal tense).
e. A pure nominal tense does not encode a state change. If the marker under consideration encodes a state change, it may be a tense/aspect combination.
f. The noun phrase time may be anaphorically resolved in discourse.

According to this definition, the English adjective *present*, as in *In 1970, the present director fired her secretary* is not a nominal tense, even though it constrains the temporal location of the noun phrase time (22d), because the adjective is not part of a grammatical paradigm (22b). Based on a detailed exploration of the distribution and meaning of Paraguayan Guaraní *–kue* and *–rã*, Tonhauser (2006, 2007) found that the two suffixes also do not fit the definition in (22) and therefore are not nominal tenses. One piece of evidence is that the two expressions entail a state change, contrary to criterion (22e): for instance, (21a) entails that Juan's state of being a teacher ceased to hold prior to the noun phrase time, which is the utterance time, and (21b) entails that the state of being a lawyer does not yet hold at the past noun phrase/topic time for the individual seen by the speaker. Tonhauser argued instead that the two expressions convey aspectual meanings, by constraining the temporal relation between the nominal situation time and the noun phrase time, parallel to the way in which grammatical aspect constrains the temporal relation between the

eventuality time and the topic time. Specifically, *–kue* was argued to be a nominal terminative aspect, i.e., entails, like English *former*,[8] that the nominal situation time ceased to hold prior to the noun phrase time, and *–rã̃* was argued to be a nominal prospective aspect/modal expression, i.e., is roughly comparable in meaning to the English *be going to* construction.

No nominal expression has, to date, been shown to be a nominal tense, under Tonhauser's definition of the category. Some authors have argued in favor of a broader characterization of the category 'nominal tense' that would allow various noun phrase-internal expressions, including those of Paraguayan Guaraní, to count as nominal tenses (e.g. Nordlinger and Sadler 2008; Haspelmath 2010). Similarly, Thomas (2012, 2014) assumed a different definition of nominal tense, which allowed him to capture similarities in the meanings of the Mbyá Guaraní (Tupí-Guaraní) cognates of the Paraguayan Guaraní expressions in their nominal and clausal uses. Tonhauser (2008), on the other hand, argued that the term 'tense' — whether nominal or verbal — should be reserved for expressions that share core meaning properties because the term is otherwise rendered useless for cross-linguistic comparison and formal analysis. Overall, much more detailed research on nominal TAM expressions across languages is needed to draw conclusions about whether nominal tense is a category of natural language. If it is not, an important question is why not, given that, in the verbal domain, there are both tensed and tenseless languages (for discussion, see, e.g., Tonhauser 2015 and the cases 'Tense and temporal adverbs', 'The interpretation of tense' and 'Tenselessness').

3.4.2 Toward a taxonomy of noun-phrase internal temporal, aspectual and modal expressions

Noun phrase-internal expressions across the languages of the world convey a range of temporal, aspectual, modal and evidential (TAME) meanings that remain largely unexplored from a formal semantic/pragmatic perspective (as also noted in Tonhauser 2006, 2007, 2008). This section provides an overview of such expressions along the lines of the taxonomy in Figure 1, which was first developed in Tonhauser 2006:353. According to this taxonomy, a first distinction among noun phrase-internal TAME expressions is whether the expression conveys a temporal precedence relation ('shifting') or not ('non-shifting'). Shifting TAME expressions are further distinguished by whether the temporal precedence is past- or future-oriented.

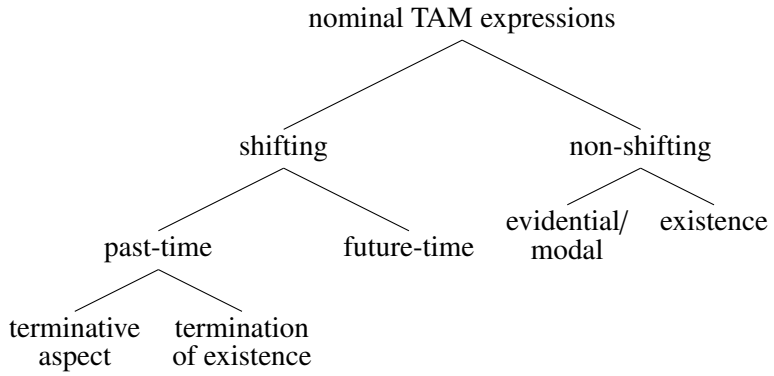

Figure 1: Taxonomy of meanings of noun phrase-internal TAME expressions

Non-shifting TAME expressions do not change the temporal overlap relation between the nominal situation time and the noun phrase time. Some of these expressions, including the English adjectives *alleged, fake, purported* and *putative*, seem to convey a modal or evidential meaning. Other expressions, including *present*, discussed above, seem to fix the noun phrase time. Expressions that may also fall into the set of non-shifting TAME expressions include the English *now–* and *current*, as well as the German adjective *heutige*. Another type of non-shifting TAME expression includes those that encode (non-)existence, like

the St'át'imcets (Salish) determiners *ti...a* 'present', *ni...a* 'absent', and *ku...a* 'remote', which assert the existence of the entity denoted by the noun phrase; the determiner *ku* does not assert the existence of the entity (Matthewson 1998). The 'past article' in Movima also seems to encode spatio-temporal non-existence (Haude 2004, 2006; Tonhauser 2006).

Among the shifting noun phrase-internal TAME expressions are the Paraguayan Guaraní expressions in (21): the terminative aspect *–kue* is past-shifting whereas the prospective aspect/modal *–rã* is future-shifting. Given the English translations of the examples, the Tariana (Arawak) expression in the examples in (23) may also fit into the category of past- and future-shifting TAM expressions. The Kalaallisut (Inuit) example in (24) illustrates a future-shifting TAME expression with a desiderative modal meaning.[9]

(23) a. pi-ɾuku pi-uka hĩ panisaru-**miki-**ɾi-naku piɾa
2sg-come.down 2sg-arrive DEM:ANIM abandoned.village-NOM.PAST-NF-TOP.NON.A/S 2sg+order
pi-katha-nha
2sg-vomit-IMPV
'When you come to an abandoned ex-village, order (him) to vomit.' (Aikhenvald 2003:187)

b. diha di-sa-do-**pena** dalipa di-a di-ka-tha-pidana
he 3sgnf-spouse-FEM-NOM.FUT near 3sgnf-go 3sgnf-see-FR-REM.P.REP
'He went (in vain) to look at his wife-to-be.' (Aikhenvald 2003:184)

(24) Context: If we're not expected [by the marshall] to leave tomorrow, then

illuiga-rput paa-liur-tariaqar-pa-rput iga-vvi-**ssa**-tsin-nik
igloo-1p.sg porch-make-need-IND.TV-1p.3s cook-location-desired-1p.sg-MOD

'we need to add to our igloo a porch, a (desired) place for us to cook in.'
(O'Dell 1994:58 as reported in Bittner 2005:383)

In English, *former, old, then* and *ex–* are a past-time shifting noun phrase-internal TAME expressions and *future, prospective, would-be, wanna-be* and *to-be* are examples of future-time shifting ones. The specific modal meanings conveyed by future-time shifting ones is an open research question (see Tonhauser 2006:ch.2.3 for discussion of the meanings of some of these).

Past-time shifting 'termination of existence' expressions do not convey a temporal precedence relation between the nominal situation time and the noun phrase time, but rather indicate that the lifetime of the entity denoted by the noun phrase has ended. The 'lifetime' is a third time relevant for the discussion of temporal properties of noun phrases (besides the noun phrase time and the nominal situation time). To illustrate the lifetime, consider the examples in (25). Some predicates, including 'teach at the University of Göttingen' in (25a), must be predicated of one of their noun phrase arguments during the lifetime of the entities denoted by the noun phrase. The predicate 'teach at the University of Göttingen' must be predicated of the subject noun phrase during the lifetime of the denotation of that noun phrase. Consequently, the predicate can be predicated of the German mathematician Emmy Noether (1882-1935) in the past tense but not in the present tense, as shown in (25a). The predicate 'be famous', on the other hand, can be predicated of the denotation of its subject noun phrase even after the lifetime of the denotation, and is therefore acceptable in the past and present tense sentences in (25b).[10]

(25) a. The German mathematician Emmy Noether taught / #teaches at the University of Göttingen.
b. The German mathematician Emmy Noether was / is famous.

Many languages have noun phrase-internal TAME expressions that convey that the lifetime of the entities denoted by the noun phrase has ended. Consider the examples in (26a) and (26b) from Mosetén (isolate) and Halkomelem (Salish), respectively.

(26) a. wiyá**-win**
old.man-completed
'the old man (that is dead)' (Sakel 2004:75, glosses adapted)

b. siyó:ye**-lh**
friend-PST
'dead friend' OR 'ex-friend' (Burton 1997:74)

According to the translation of (26a), the Mosetén expression *–win* conveys that the lifetime of the denotation of the noun phrase has ended, i.e., that the man is dead. The translation of (26b) suggests that the Halkomelem expression *–lh* (glossed PST for 'past') can convey both a past-time shifting terminative aspect meaning, comparable to that illustrated in (21a) and (23a), as well as a termination of existence meaning.[11]

In sum, the languages of the world have a rich array of noun phrase-internal expressions with temporal, aspectual, modal and evidential meanings that remain largely unexplored, even in the better-studied European languages.

3.5 Summary

This section assumed a neo-Reichenbachian framework for temporal and aspectual reference to compare the temporal interpretation of finite verbs to that of noun phrases, for which both the noun phrase time and the nominal situation time was assumed. The temporal interpretation of noun phrases was observed to be anaphoric, which was captured by assuming that the noun phrase time is a temporal anaphor, like the topic time in the verbal domain. The nominal situation time, on the other hand, was assumed to be existentially bound, like the eventuality time. Temporal interpretation in the two domains was also compared on the basis of the question of whether there are nominal tenses with a distribution and meaning similar to verbal tenses. While there is, to date, no empirical evidence for nominal tenses, nominal expressions convey a rich array of temporal, aspectual, modal and evidential meanings that remain largely unexplored.

4 Temporal properties of nouns

This section examines how the meanings of nouns influence the temporal properties of noun phrases. In particular, this section shows that nouns differ in what is conveyed about the relation between the property denoted by the noun and the lifetimes of the entities denoted by the noun.

The examples discussed in the preceding sections featured noun phrases with nouns that convey properties that may be true of an entity at one time during the entity's lifetime and false at another, such as *fugitive, visitor, president, passerby* or *fiance*. The examples did not feature nouns that convey properties that are true of an entity during its entire lifetime, such as *person, dog* or *tree*. Examples with nouns conveying temporary properties were chosen, of course, because the truth conditions of an example like (27a) changes depending on the time to which the noun phrase time of *the student* is resolved. The conditions under which (27b) is true, on the other hand, do not change depending on the time to which the noun phrase time of *the dog* is resolved.

(27) a. The student was back home.

b. The dog was back home.

The distinction between nouns that convey permanent properties, like *dog*, and nouns that convey temporary properties, like *student*, is reminiscent of Carlson's (1977) distinction between individual-level verbal predicates (such as *be intelligent*), which apply to individuals, and stage-level verbal predicates (such as *be drunk*), which may be true of an individual at one time and false at another. Carlson (1977) analyzed

stage-level predicates as applying to stages of individuals, rather than individuals in their full spatio-temporal extension. In this work, common nouns were "considered to be predicates that apply only to individuals, and never to stages" (p.105). This position was revised in Carlson 1982:172ff. after considering examples like (28), uttered in a context in which both the third batter and the twelfth batter are the same person, namely Reggie Jackson.

(28) Welch struck out the third batter but he did not strike out the twelfth batter.

Carlson observes that a variant of (28) in which *the third batter* and *the twelfth batter* are replaced by *Reggie Jackson* is contradictory. To capture the fact that these substitutions change the truth conditions, Carlson attributes to *batter* a stage-level interpretation, on which *batter* denotes spatio-temporal parts of individuals taking a turn at a bat. Thus, nouns, like verbs, differ in whether the property they denote is true of entities during their entire lifetime, or only during part of their lifetime.

Agentive nominals like *batter* are discussed in detail by Levin and Rappaport (1988), who distinguish between *-er* nominals that inherit the argument structure of the base verb ('event nominals') and those that do not ('nonevent nominals'). They point out that event nominals differ from nonevent nominals in that the former presuppose that the entity denoted by the noun phrase in which the event nominal occurs has participated in an event of the type denoted by the base verb. For example, a person who is referred to by *the destroyer of the city* (which features an event nominal) must have "participated in the event of destroying the city" (p.1069) whereas a boat that is referred to by *the destroyer* (which features a nonevent nominal) need not have ever destroyed anything, but is only intended for this use. Similarly, for somebody to be a grinder of fine coffees, they must have ground coffee whereas a (coffee-)grinder can be a machine intended for grinding coffee that has never ground coffee. Thus, whereas event nominals denote temporary properties of entities that are true of the entities only after the entities have participated in the relevant event (see also Barker 1998 on *-ee*-nominals), nonevent nominals denote permanent properties of entities and encode that the entities are intended to participate in the relevant event (i.e., the lexical meaning of these nouns includes a modal meaning). As a consequence, when the noun phrase time of the event nominal in (29a) is resolved to the utterance time or a past topic time, then the example entails that Jake has ground coffee during his lifetime. On the other hand, when the noun phrase time of the nonevent nominal in (29b) is resolved to the utterance time or a past topic time, then the example entails that the entity is intended to be used to grind coffee.

(29) a. The grinder of fine coffees – his name is Jake – left an hour ago.
b. The coffee grinder – it's a Bodum – was a gift.

In sum, event and nonevent nominals do not constrain the temporal location of the nominal situation time or the noun phrase time of noun phrases in which such nouns occur. Rather, these types of nouns, as well as nouns denoting stage- and individual-level properties, differ in what is true of the entities denoted by the nouns during the lifetimes of the entities.

5 Summary and open research questions

This case explored temporal properties of noun phrases cross-linguistically. One property is that noun phrases (at least those of English, German and Paraguayan Guaraní) are temporally interpreted at times that are contextually salient, such as utterance or topic times (section 2). Whether the denotation of the noun phrase is contextually established also influences its temporal interpretation. An open research question is whether languages differ in the times at which noun phrases can be temporally interpreted. A comparison of the temporal interpretation of noun phrases and finite verbs in section 3 revealed parallels (e.g., temporal

anaphora play a role in both domains) as well as differences (e.g., in English, tense must constrain the temporal interpretation of finite verbs but not of noun phrases). As already noted in section 3.4.2, the meanings of nominal expressions with temporal, aspectual, modal and evidential meanings remain largely unexplored even in well-studied languages like English. Finally, as discussed in section 4, the meanings of nouns have implications for the temporal properties of the noun phrases in which they occur. Whether the meanings of nouns in the languages of the world influence the temporal properties of noun phrases in ways other than those described in section 4 is another open research question.

See also: Chapter 'Tense and temporal adverbs', Chapter 'The interpretation of tense', Chapter 'Tenselessness'

Notes

[1]Denis and Muller (2004:48) challenge the effectiveness of (8a) as counterevidence to Musan's analysis, arguing that the noun phrase is presuppositional because it receives a partitive interpretation. Although their intuition about the noun phrase receiving a partitive interpretation is spot-on, the noun phrase nevertheless is nonpresuppositional according to Musan's criteria: *some crew members* is headed by a weak determiner and realizes the pivot of an existential construction. But even if the noun phrase could be argued to be presuppositional according to Musan's criteria, it would still be falsely predicted to be temporally interpreted at the topic time because Musan (1999:640) assumes that partitive noun phrases in existential constructions are temporally interpreted at the topic time.

[2]Demirdache (1996) argued that because St'át'imcets (Salish) noun phrases are all nonpresuppositional (Matthewson 1998) they cannot be temporally interpreted at a time other than the topic time. See Tonhauser (2006:§9.3.2) for counterexamples that show that St'át'imcets noun phrases can be interpreted at times other than the topic time.

[3]This definition differs from Comrie's (1985:9) definition of tense as "grammaticalized expression of location in time" and from definitions according to which tense temporally relates the eventuality time and the utterance time (e.g., Chung and Timberlake 1985; Zagona 1990; Stowell 1996).

[4]Tenses also differ from temporal adverbs in that the former presuppose a particular temporal reference whereas the latter assert it (e.g. Webber 1988; Kamp and Reyle 1993; Bittner 2008).

[5]For attributively used adjectives, an 'adjective situation time' can be assumed to capture the time at which the property denoted by the adjective is true of the entities denoted by the noun phrase. See Romero and Bock 2001 for an acquisition study investigating the temporal location of the adjective situation time.

[6]Bach (1968) also noted that English noun phrases need not be temporally interpreted at the time of the verb. He proposed (p.100f.) that English nouns derive from relative clauses, with the underlying tense form deleted. See Bolinger 1967 for arguments against the relative-clause transformation analysis.

[7]Non-standard glosses used in the Paraguayan Guaraní examples: A1sg = first person singular set A cross-reference marker, AG = agentive, NOM.PROSP = nominal prospective aspect/modal, NOM.TERM = nominal terminative aspect.

[8]The analysis of *former* in Dowty et al. 1981:163f differs from Tonhauser's in that it also requires that the nominal situation time does not temporally overlap with the evaluation time. The analysis incorrectly predicts the example in (i) to be contradictory because it conveys that Peter Hoyle is a present policeman, i.e., a policeman at the utterance time, but also, according to Dowty et al.'s analysis, that he is not a policeman at the evaluation/utterance time.

(i) Peter Hoyle is a former and present Ukiah policeman. (Tonhauser 2006:39)

[9]The following non-standard glosses occur in the examples in (23) and (24): FR = frustrative, IND.TV = indicative transitive, MOD = modalis, nf/NF = non-feminine, NOM.FUT = nominal future, NOM.PAST = nominal past, REM.P.REP = remote past reported, TOP.NON.A/S = topical non-subject.

[10]These examples also show that the temporal interpretation of noun phrases may constrain the temporal interpretation of the verb: when a noun phrase realizes an existence-dependent argument of the verb, as in (25a), then the time at which the verb is

temporally interpreted must be included in the lifetime of the individual denoted by the noun phrase. For further discussion of so-called lifetime effects see, e.g., Musan 1999.

[11]The Halkomelem suffix *–lh* may be realized on nouns and verbs. Wiltschko (2003) assumed that *–lh* is a past tense and takes the fact that *–lh* also occurs on nouns to motivate that it is a nominal tense; Matthewson (2005) argued that the evidence for tense inside Halkomelem noun phrases is not convincing.

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