

‘Than’ = ‘More’ + Exhaustivity: Evidence from Circassian*

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Abstract

This paper discusses new facts on comparative constructions in Circassian languages that contribute to a theoretical debate about the semantics of comparatives. We argue that Circassian comparatives provide the direct evidence for the combination of two recent insights into comparative semantics: the theory of two loci of degree quantification in such constructions [1, 9] and theories postulating exhaustivity or maximisation at the edge of the standard clause [2].

1 Introduction

The goal of this work is twofold: first, it brings in new facts on comparative constructions in Circassian languages (a branch of Northwest Caucasian); second, it contributes to a theoretical debate about the semantics of comparative constructions. We will argue that Circassian comparatives provide the direct evidence that has been missing so far for the combination of two recent insights into comparative semantics: the theory of ‘two loci of degree quantification’ in such constructions [1, 9] and theories postulating ‘exhaustivity’ or ‘maximisation’ at the edge of the standard clause, hypothetically associated with the standard morpheme *than* and its analogues in other languages [2].

As these insights have been introduced independently of each other, an extra step will be needed to glue the two analyses together. The proposal presented here solves this task and sheds light on the morphological make-up of Circassian comparatives that otherwise would have remained a mystery.

Let us start with the theoretical background on the semantics of the comparative constructions, followed by a short introduction to Circassian languages and a formulation of a challenge they present to the standard theories of comparison. Section 2 presents the ingredients we will need to make sense of the Circassian data. There will be two ingredients: the idea of two sources (or two loci) of degree quantification in the comparative construction – and the idea of a maximisation or exhaustivity operation at the edge of the standard clause in the comparative construction. In section 3, we apply these ideas to Circassian data, developing our analysis of comparatives in Circassian languages.

1.1 Comparatives: Standard analyses

In a comparative construction in (1), *-er* is a comparative marker, or a comparative morpheme; *than* is a standard marker, or a standard morpheme; finally, *than Mary (is)* is a standard phrase:

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- (1) John is taller than Mary (is).

Semantically, (1) conveys that the degree that John reaches on the scale of height exceeds the degree that Mary reaches on the same scale:

- (2) $\llbracket \text{John is taller than Mary (is)} \rrbracket = \text{John's height} > \text{Mary's height}$

Several theories of how this interpretation is achieved compositionally has been formulated. The now standard analysis of comparative constructions gives the comparative morpheme the semantics of a quantifier over degrees, as in (3), see [4, 11, 5] a.m.o. – the denotation also known as a ‘2-place MORE’:

- (3) $\llbracket \text{MORE}_2 \rrbracket_{\langle dt, \langle dt, t \rangle \rangle} = \lambda D_{\langle dt \rangle} \lambda D'_{\langle dt \rangle} . \mathbf{max}(D') > \mathbf{max}(D)$

The comparative morpheme in (3) takes two sets of degrees and returns ‘true’ if the maximal point of the second set exceeds the maximal point of the first set. How does this 2-place MORE get interpreted? It depends on a set of assumptions about the meanings of other elements in the comparative construction – in particular, the semantics of the standard phrase. In English, *than* is known to be able to take a clausal complement (there are debates on whether it has to, but this is irrelevant at this point), and some part of this clause gets elided, as in (4-a). Practically all the existing analyses of clausal standards of comparison involve degree abstraction in the standard clause, for which the elided material is necessary. Under these analyses, the standard phrase denotes a set of degrees, as in (4-b):

- (4) a. John is taller than Mary is ~~d-tall~~.
 b. $\llbracket \text{than Mary is} \rrbracket = \lambda d. \text{Mary is } d\text{-tall}$

This set of degrees denoted by the standard phrase is supplied as the first argument of a 2-place MORE. The resulting semantic type of this combination is $\langle dt, t \rangle$. The 2-place MORE cannot stay in situ to get its interpretation because of the type mismatch between the adjective (we assume the type of gradable adjectives is $\langle d, et \rangle$) and the comparative morpheme. The DegP (MORE + standard phrase) has to undergo QR leaving the trace of type d behind. This trace of type d can combine felicitously with the gradable adjective with a type $\langle et \rangle$ result, combining later with the subject, the result being a truth value.

The movement of DegP is accompanied by lambda-abstraction over the degree variable, so that the resulting semantic type of the matrix clause would be $\langle dt \rangle$ – quite like the semantic type of the standard clause. Two arguments of type $\langle dt \rangle$ is exactly what MORE can combine with.

DegP movement is also motivated by ellipsis resolution in the *than*-clause, which has been argued to be the case of antecedent-contained deletion. If the DegP with the *than*-clause remains in situ, this would result in infinite regress in the ellipsis site, see [5] a.m.o.

A sentence *John is taller than Mary (is)* would then have the following LF and semantics:

- (5) a. **LF:** $[-\text{er}]_{\langle dt \rangle} \llbracket \text{than } 1 \llbracket \text{Mary is } t_1\text{-tall} \rrbracket \rrbracket_{\langle dt \rangle} 2 \llbracket \text{John is } t_2\text{-tall} \rrbracket \rrbracket$
 b. **Semantics:** $\mathbf{max}(\lambda d. \text{John is } d\text{-tall}) > \mathbf{max}(\lambda d. \text{Mary is } d\text{-tall})$

The driving force of the comparative interpretation in this analysis is the comparative morpheme. The standard morpheme THAN is treated as meaningless and is practically disregarded in the derivation.

An alternative entry for MORE is often suggested, for the cases when the standard is a DP rather than a clause. This alternative entry, often called a 3-place MORE, can be interpreted

‘directly’ to get the same result as (5-b), see [3] a.o.:

- (6) $[\text{MORE}_3] = \lambda s_e \lambda g_{(d,et)} \lambda x_e. \mathbf{max}(\lambda d. g(d)(x)) > \mathbf{max}(\lambda d. g(d)(s))$
- (7) a. John is taller than Mary.
 b. **LF:** [John [-er [than Mary]] [$\lambda d \lambda x. x$ is d -tall]]]
 c. **Semantics:** [John is taller than Mary] = $[\text{MORE}_3](\mathbf{Mary})(\lambda d \lambda x. x \text{ is } d\text{-tall})(\mathbf{John})$
 = $\mathbf{max}(\lambda d. \text{John is } d\text{-tall}) > \mathbf{max}(\lambda d. \text{Mary is } d\text{-tall})$

Note that this analysis too treats standard markers (e.g. English *than*) as semantically empty [4, 11].

This assumption of semantic transparency of the standard marker has been questioned recently, based on quite intricate reasoning and indirect evidence. We will discuss two recent insights into the semantics of the standard phrase and its role in the comparative construction: 1) standard markers can introduce degree quantification, quite like comparative morphemes [1, 9]; 2) the edge of standard phrase involves a maximality, or exhaustivity, operator [2].

However convincing the argumentation for these two innovations, what is immediately worrying is the absence of direct evidence for them – in particular, no language has been observed that uses one and the same morpheme both as a comparative and a standard marker, nor has a language been attested with an explicit maximal informativity operator. We discuss novel data from Circassian, which fills both gaps.

Before we discuss these ideas in more detail and apply them to the Circassian comparative, let us give you some background on Circassian languages.

1.2 Introduction to Circassian and Circassian comparatives

The two Circassian languages, namely Adyghe and Kabardian, constitute a branch of the Northwest Caucasian (alias Abkhaz-Adyghe) family. While being originally spoken in the Northwest Caucasus, the Circassian languages are now scattered not only in a few Russian districts, but also in Turkey and some other countries of the Middle East. Adyghe and Kabardian are left-branching ergative polysynthetic languages with very complicated morphology but without productive incorporation. All arguments are cross-referenced in their heads. Further, there are two core cases, namely absolutive and oblique, marking primarily non-absolutive arguments, including the transitive agent. Overt marking of these cases depends partly on specificity and the lexical type of a noun, cf. [8] a.o.

The data presented here are mainly from the Temirgoi dialect of Adyghe as it is represented in Republic of Adyghea, Russian Federation, as well as from Standard Adyghe based on the same dialect. Some data come from the Besleney dialect of Kabardian. The source of the data is original fieldwork by the authors, unless indicated otherwise. While comparatives in Adyghe and Kabardian may differ in details, the relevant facts seem to hold for both languages, with differences stated where needed.

A typical Circassian comparative sentence has a comparative morpheme appearing in front of the gradable adjective and a postposition introducing the standard phrase. These are *nah* \approx *more* and *nah(r)jə* \approx *than* respectively in the varieties under discussion ((9) = (28) from [10]). The standard marker *nah(r)jə* assigns Oblique case to the standard DP:

- (8) $mə \text{ } \mathfrak{B}^w \text{eg}^w \text{-r}$ [mwe-drje $\mathfrak{B}^w \text{eg}^w \text{-m}$ **nahrjə**] [**nah** č'əh] BESLENEY KABARDIAN
 this road-ABS that-other road-OBL THAN MORE long
 ‘This road is longer than the other one’

- (9) a-r [se-š' **nahjə**] [**nah** ɾʷəšə-ɸ] ADYGHE
 that-ABS I-OBL THAN MORE smart-PST
 'He was smarter than me'

The constituency marked in (8) and (9) is supported by constraints on word order found in Circassian (the following examples come from Adyghe). Generally, the order between the subject, the standard phrase and the MORE + gradable predicate constituent is free in Circassian. Consider one example where the standard phrase is not adjacent to the MORE + gradable predicate constituent:

- (10) [dnjepre **nahjə**] volye [**nah** č'əh]
 Dnieper THAN Volga MORE long
 'Volga is longer than Dnieper'

There is evidence that MORE can form a lexical complex with the gradable predicate (see example (14), where this is the case), but we won't concentrate on these facts. Nothing hinges on the morphological status of *nah* in what follows.

Furthermore, an adjunct cannot intervene between the standard marker *nah(r)jə* and the standard DP, as well as between the comparative morpheme *nah* and the gradable predicate, but it can appear in other intermediate positions (data from [10]):

- (11) (njewəš') a-r (njewəš') d-e-pč'e-je-š't (njewəš') [**nah** (*njewəš')
 tomorrow that-ABS tomorrow LOC-DYN-jump-UP-FUT tomorrow MORE tomorrow
 ɬag-ew] (njewəš') [se-š' (*njewəš') **nahjə**] (njewəš')
 high-ADV tomorrow I-OBL tomorrow THAN
 'Tomorrow he will jump higher than me'

Another indirect indication that *nah(r)jə* is related to the standard syntactically and the comparative morpheme is related to the subject (via combination with the gradable predicate) has to do with 'agreement' (the term is used here atheoretically, more accurate term would be 'cross-reference'). Both *nah(r)jə* and *nah* can bear cross-reference morphology, but only *nah(r)jə* cross-references the standard (= (22) from [10]):

- (12) te [t-jə-ɸʷəneɸʷə-me **a-nahjə**] [tə-nah-deɸʷə]
 we 1PL.IO-3SG.A-neighbour-OBL.PL 3PL.IO-THAN 1PL.ABS-MORE-good
 'We are better than our neighbours'

Finally, semantically, Circassian comparatives don't generally bear evaluativity (from a comparative like 'John is taller than Bill' it doesn't follow that either John or Bill is tall) and can contain differential measure phrases (marked with instrumental case):

- (13) a-r d-e-pč'e-je-š't **mjetr-jə-š'-č'e** [**nah** ɬag-ew] [se-š' **nahjə**]
 that-ABS LOC-DYN-jump-UP-FUT meter-LNK-3-INSTR MORE high-ADV I-OBL THAN
 'He will jump three meters higher than me'

This suggests that the construction doesn't involve any 'emphasis' (although evaluative/'emphatic' readings of comparatives are possible) and the standard marker and the comparative morpheme together with other components of the construction constitute a familiar comparative that semantically amounts to a statement that a certain individual (subject) exceeds some other individual (standard) on a particular scale (with an option to specify the difference between the two).

The last core fact about the Circassian comparative construction is that the standard marker *nah-(r)jə* is optional in Besleney Kabardian, but much less so in Adyghe. The constructions with omitted *nah-(r)jə* is judged in Adyghe as colloquial (data from [10]):

- (14) he-r **nah**-ə-š^wə [ç'etwə-m ?(**nahjə**)]
 dog-ABS MORE-ALNK-kind cat-OBL THAN
 'The dog is more kind than the cat'

Why are Circassian comparatives interesting? We believe that it's the fact that the standard marker *nah(r)jə* is transparently decomposed into *nah* + particle *(r)jə*. This decomposition is supported, first, by the wide use of *(r)jə* in non-degree constructions – and, second, by the optionality of *r* both in the standard marker and in the other uses of the particle in Besleney Kabardian (although conditioned morphologically). *(r)jə* has a number of uses in Circassian. Most prominently, it is a scalar additive particle similar to English 'even', but it also forms NPIs, free choice items and universal quantifiers in combination with different elements, such as wh-words. One example where a wh-element + *(r)jə* occur in a free relative clause is below:

- (15) **xet-jə** ap-ew sə-z-ɣ^wəç'e-re-m s-jə-wəç'ə-š't
 who-ADD first-ADV 1SG.ABS-REL-meet-DYN-OBL 1SG.ABS-3SG.ERG-kill-FUT
 'Whoever finds me will kill me' (Genesis 4:14)

We will have more to say on *(r)jə* towards the end of the paper. Let's now formulate our goal.

Under the assumption that *nah* as a comparative morpheme and *nah* as part of the standard marker is one and the same element with one and the same semantics, Circassian seems to not fit easily in the classic analyses of comparatives outlined in the previous section. These classic analyses encode the comparative semantics in the comparative morpheme, while the standard markers are assumed to be semantically empty. Something else is needed to make sense of Circassian data.

The task of a compositional analysis of the Circassian comparative has two subtasks: 1) explaining the appearance of the same element *nah* both as a comparative marker and as part of the standard marker; 2) explaining the role of *(r)jə* in the semantics of standard of comparison.

Before moving on to solving this task, let's put in place the theoretical ingredients needed for our analysis.

2 Towards an analysis: Theoretical ingredients

2.1 Two sources of degree quantification in comparative constructions

Several new insights into the role of standard markers and semantic effects at the edge of standard phrase have been formulated recently.

Unlike in the classic analyses outlined in the Introduction, some authors argue that standard markers are not semantically empty, but can perform degree quantification along with the comparative morpheme. The general idea that the standard marker performs degree quantification has been proposed several times recently for different reasons in different forms for different types of languages [1, 9] We sketch two implementations.

The theory developed in [1] involves slightly different entries for *more* and *than*, but the roles of the two are very similar, as, under this analysis, both encode the 'exceed' relation between two degrees (MORE looks more like a version of a 3-place MORE discussed in the introduction, THAN is the same as the classic 2-place MORE):

- (16) a. $\llbracket \text{MORE} \rrbracket = \lambda g_{\langle d, et \rangle} \lambda s_d \lambda x_e. \mathbf{max}(\lambda d. g(d)(x)) > s$
 b. $\llbracket \text{THAN} \rrbracket = \lambda S_{\langle d, t \rangle} \lambda T_{\langle d, t \rangle}. \mathbf{max}(T) > \mathbf{max}(S)$

According to the analysis in [1], a simple comparative sentence would actually contain two instances of MORE and one instance of THAN. The authors assume that MORE in the standard clause is required by identity conditions on ellipsis, and the instance of MORE in the standard clause goes unpronounced. Thus the comparative semantics gets introduced three times. Omitting the details of the derivation, we sketch how the resulting familiar comparative semantics is built up under this analysis:

- (17) a. Rod A is longer than Rod B is.
LF: $\llbracket [\text{THAN} [\text{S } \lambda d'. \text{Rod B } \text{MORE } \text{long } d']] [\text{T } \lambda d. \text{Rod A } \text{MORE } \text{long } d] \rrbracket$
 b. $\llbracket \text{T} \rrbracket = \lambda d. \llbracket \text{MORE} \rrbracket(\llbracket \text{long} \rrbracket)(d)(\llbracket \text{Rod A} \rrbracket) = \lambda d. \mathbf{long}(\text{Rod A}) > d$
 c. $\llbracket \text{S} \rrbracket = \lambda d'. \llbracket \text{MORE} \rrbracket(\llbracket \text{long} \rrbracket)(d')(\llbracket \text{Rod B} \rrbracket) = \lambda d'. \mathbf{long}(\text{Rod B}) > d'$
 d. $\llbracket \text{THAN} \rrbracket(\llbracket \text{S} \rrbracket)(\llbracket \text{T} \rrbracket) = 1$ iff $\max(\lambda d. \mathbf{long}(\text{Rod A}) > d) > \max(\lambda d'. \mathbf{long}(\text{Rod B}) > d')$

A different ‘two loci of degree quantification’ theory [9] is motivated by comparative constructions in languages like Hebrew, where the comparative morpheme is optional, and when it is absent, the standard marker is enough for the comparative interpretation. Under this analysis, both THAN and MORE are of the same type $\langle \langle d, t \rangle, \langle d, t \rangle, t \rangle$. It is a degree quantifier that states that there is a degree such that it falls within both intervals in combines with:

$$(18) \quad \llbracket \text{MORE} \rrbracket = \llbracket \text{THAN} \rrbracket = \lambda S_{\langle d, t \rangle} \lambda T_{\langle d, t \rangle}. \exists d [d \in S \ \& \ d \in T]$$

For this semantics to work, [9] assumes a silent negation in the standard clause, so the two intervals in (19) are 1) the set of degrees of strength that Yoni does **not** meet, and 2) the set of degrees that Miri does meet:

- (19) a. Miri kazaka mi-Yoni
 Miri strong.FEM THAN-Yoni
 ‘Miri is stronger than Yoni’
 b. $\llbracket \text{Miri kazaka mi-Yoni} \rrbracket = \llbracket \text{THAN} \rrbracket(\lambda d. \text{Yoni is NOT } d\text{-strong})(\lambda d'. \text{Miri is } d'\text{-strong})$

When both the standard marker and the comparative morpheme are present, the standard phrase, presumably, acts as a degree quantifier domain adverbial.

The semantics we will develop departs from both analyses presented here, but the core idea remains the same.

2.2 Maximization/exhaustivity in comparative constructions

Independently and based on quite different data – scope of quantifiers in the standard phrase – Beck [2] (building on [6] a.o.) motivates the necessity of a silent ‘maximal informativity’ operator m_inf at the edge of a standard clause. A slightly modified version of m_inf :

- (20) $m_inf(p_{\langle \langle d, t \rangle, t \rangle}) = \lambda D. p(D) \ \& \ \neg \exists D' [p(D') \ \& \ D \neq D' \ \& \ [p(D') \rightarrow p(D)]]$
 The maximally informative intervals out of set of intervals p are the set of intervals D s.t. there is no other interval D' in p s.t. $p(D')$ entails $p(D)$ (i.e. if D is in p then so is D').

The resulting set of intervals can be a singleton (in a simple case) or it can contain more than one interval in certain cases. To get from this resulting set of intervals to one interval, [2] defines

an extra $\mathbf{max}_>(p)$ operation that picks the maximum element out of this set relative to the $>$ relation on intervals or degrees. Thus the combination $\mathbf{m_inf} + \mathbf{max}_>$ at the edge of *than*-clause yield an interval $\langle dt \rangle$, which is a familiar semantic type for standards of comparison.

The motivation for these operations is quite complex and we won't reproduce it here, but they have analogues outside of the degree domain, e.g. at the edge of free relative clauses [7].

3 The analysis of Circassian comparatives

Following the idea about two sources of degree quantification in comparatives, we assume that *nah* as a comparative marker and as part of a standard marker has the same semantics of a degree quantifier. (21) is equivalent to the classic denotation for a 2-place MORE:

$$(21) \quad \llbracket nah \rrbracket = \lambda S_{\langle dt \rangle} \lambda T_{\langle dt \rangle} . \mathbf{max}(T) > \mathbf{max}(S)$$

Let's first build the standard phrase semantics using (21). The first argument of *nah* is an interval, so the standard phrase should host degree abstraction for this analysis to work. In Circassian, the standard syntactically is a DP rather than a clause. We treat this as a purely syntactic requirement of the standard marker that doesn't have to have semantic consequences: the standard phrase in Circassian is still a degree interval semantically.

Different ways to achieve this are possible. Here we assume a covert/elided gradable predicate as part of the standard phrase: λd . *that d-long road*. Degree abstraction inside a standard phrase is visible in Circassian when the DP contains a relative clause. In this case, one can observe 'degree relativisation' as part of verbal morphology in the relative clause: **ze-re-s'ə-tə-rə-m nahjə** (**REL**-manner-locative-*stand*-past-obl than) 'than how it was'. (22), we propose, is the denotation of the standard phrase before the particle combines with it – a set of intervals:

$$(22) \quad \llbracket \text{that road } \mathbf{nah} \rrbracket = \lambda T_{\langle dt \rangle} . \mathbf{max}(T) > \mathbf{max}(\lambda d . \text{that } d\text{-long road}) = \lambda T_{\langle dt \rangle} . \text{LENGTH}(\text{that road}) \in T$$

We propose that $(r)jə$ at the edge of Circassian standard clause combines the semantics of $\mathbf{m_inf}$ and $\mathbf{max}_>$ from [2] and thus is equivalent to successive application of these two operators, taking as input a set of intervals and giving one largest maximally informative interval as output:

$$(23) \quad \llbracket (r)jə \rrbracket (p_{\langle \langle d, t \rangle t \rangle}) = \mathbf{max}(\lambda D . p(D) \& \neg \exists D' [p(D') \& D \neq D' \& [p(D') \rightarrow p(D)]])$$

After $(r)jə$ combines with (22), the result will be the largest maximally informative interval containing *the length of that road*:

$$(24) \quad \llbracket \text{that road } \mathbf{nah} \text{-}(\mathbf{r})\mathbf{jə} \rrbracket = \mathbf{max}_> \text{-} \mathbf{m_inf}(\lambda T_{\langle dt \rangle} . \text{LENGTH}(\text{that road}) \in T) \\ = \mathbf{max}(\lambda T_{\langle dt \rangle} . \text{LENGTH}(\text{that road}) \in T \& [\neg \exists T' . T' \subset T \& \text{LENGTH}(\text{that road}) \in T'])$$

(24) has the right type to be an argument of *nah* again and is basically equivalent to the interval $\lambda d . \text{LENGTH}(\text{that road}) \geq d$. It now can be combined with the matrix clause:

$$(25) \quad \llbracket \text{That road } \mathbf{nah} \text{-}(\mathbf{r})\mathbf{jə} \text{ this road is } \mathbf{nah} \text{ long} \rrbracket = \llbracket \mathbf{nah} \rrbracket (\llbracket \text{that road } \mathbf{nah} \text{-}(\mathbf{r})\mathbf{jə} \rrbracket) (\llbracket \text{this road is } d'\text{-long} \rrbracket) \\ = [\lambda S_{\langle dt \rangle} \lambda T_{\langle dt \rangle} . \mathbf{max}(T) > \mathbf{max}(S)] (\lambda d . \text{LENGTH}(\text{that road}) \geq d) (\lambda d' . \text{LENGTH}(\text{this road}) \geq d') = \mathbf{max}(\lambda d' . \text{LENGTH}(\text{this road}) \geq d') > \mathbf{max}(\lambda d . \text{LENGTH}(\text{that road}) \geq d)$$

Finally, we need to analyse comparatives without (overt) *nah*- $(r)jə$, as in (14). Tests (omitted here) show that a bare standard DP is a direct argument of *nah* on the gradable predicate (=

MORE), which means that we are dealing with a 3-place version of *nah* when *nah-(r)jə* is absent. We assume a type-shifted version of *nah* taking a gradable predicate and two individuals:

- (26) a. $\llbracket nah_3 \rrbracket = \lambda y_e \lambda G_{(det)} \lambda x_e. \llbracket nah \rrbracket (\lambda d. G(d)(y)) (\lambda d'. G(d')(x))$
 b. $\llbracket nah_3 \rrbracket = \lambda y_e \lambda G_{(det)} \lambda x_e. \mathbf{max}(\lambda d'. G(d')(x)) > \mathbf{max}(\lambda d. G(d)(y))$

This will derive the right result for sentences with only one instance of *nah*, but it doesn't derive the slightly degraded status of such sentences in Adyghe. We propose that the status of the 3-place *nah* in Besleney Kabardian and in Adyghe is different – in the former, it is a freely available shift or a systematic lexical ambiguity of *nah*, while in the latter it is a marked option.

4 Discussion

We discussed Circassian data that fit some recent proposals concerning the semantics of comparatives – and, at the same time, provide support for such proposals. However, there are issues with the analysis we develop here.

First, to make the analysis fully decompositional, we need to clarify the relation between *(r)jə* in comparatives and its other uses. Its use as 'even' is 'non-truth-conditional' in the sense that its only contribution is presuppositional, while *(r)jə* in comparatives contributes to the truth-conditional meaning. *(r)jə* in combination with wh-elements (*xet-jə* 'any-/everybody') has a different kind of meaning altogether. All these uses are intuitively related, but not identical. We leave this to future work.

Second, a careful look is needed at how Circassian standard DPs get to have type $\langle dt \rangle$. In some cases postulating extra structure inside the standard DP (as we did in (22)) is problematic.

References

- [1] Peter Alrenga, Christopher Kennedy, and Jason Merchant. A new standard of comparison. In *Proceedings of WCCFL 30*, 2012.
- [2] Sigrid Beck. Quantifiers in 'than'-clauses. *Semantics and Pragmatics*, 3:1–72, 2010.
- [3] Rajesh Bhatt and Shoichi Takahashi. When to reduce and when not to: Crosslinguistic variation in phrasal comparatives. In *Generative Linguistics in the Old World (GLOW) 28*, Newcastle, 2008.
- [4] M.J. Cresswell. The semantics of degree. In Barbara Partee, editor, *Montague Grammar*, pages 261–292. Academic Press, New York, 1977.
- [5] Irene Heim. Degree operators and scope. In Wolfgang Sternefeld, editor, *Audiatur Vox Sapientiae. A Festschrift for Arnim von Stechow*, pages 214–239. Akademie-Verlag, Berlin, 2001.
- [6] Irene Heim. Remarks on comparative clauses as generalized quantifiers. Ms., MIT, 2006.
- [7] Pauline Jacobson. On the quantificational force of free relatives. In Emmon Bach, Eloise Jelinek, Angelika Kratzer, and Barbara Partee, editors, *Quantification in Natural Languages*. Kluwer Academic Publishers, Dordrecht, 1995.
- [8] M.A. Kumakhov, K. Vamling, and Z. Kumakhova. Ergative case in the Circassian languages. *Lund University Department of Linguistics Working Papers*, 45:93–111, 1996.
- [9] Roger Schwarzschild. Comparative markers and standard markers. In Michael Y. Erlewine and Yasutada Sudo, editors, *Proceedings of the MIT Workshop on Comparatives (to appear)*, 2011.
- [10] M.V. Vill. *Sravnitel'naya stepen v temirgoevskom dialekte adygeyskogo yazyka (Comparison in Temirgoy dialect of Adyghe)*. Fieldwork report, Moscow, 2013.
- [11] Arnim von Stechow. Comparing semantic theories of comparison. *Journal of Semantics*, (3):1–77, 1984.