Degree Modification in Tundra Nenets and Beyond

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Overview

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1. Introduction

- **University**: Eberhard Karls Universität Tübingen & Sonderforschungsbereich SFB 833 „Dynamik und Adaptivität sprachlicher Strukturen"
- **My Homepage:** http://polina-berezovskaya.com/research/
- **Area of research**: theoretical linguistics, formal semantics, fieldwork
- **Topics:** degree constructions, focus and intervention effects, indefinites, multilingualism

1. Introduction

Formal Semantics

- belongs to the area of descriptive and theoretical linguistics
- modelling of truth conditions on the level of the sentence meaning with the help of analytical and mathematical methods **sentences are associated with their intuitive sentence meaning**
- **Principle of Compositionality** (Frege 1923)
- Rules: Predicate Modification, Predicate Abstraction, Function Application (Heim & Kratzer 1998)

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1. Introduction

Formal Semantics

(1) [[*Mary is taller than Peter*]] = 1 iff

MAX (λd.Mary is d-tall) > MAX (λd'.Peter is d'-tall)

„The maximal degree of height that Mary reaches exceeds the maximal degree of height that Peter reaches.“

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1. A few words about my topics…

- **General:** abstract semantic theories are tested with the help of linguistic data (experiments, fieldwork, corpus studies etc.)

- **Universal Grammar**: some core features that are common to every language. Where are points of variation?

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1. A few words about my topics…

- **My topics:**   (i) Comparison Constructions (degree constructions)

  (ii) Focus and intervention effects (cf. e.g. Berezovskaya & Howell 2020, Howell, Hohaus, Berezovskaya et al. 2021)

(2)   *Mary is taller than Peter.*

(3)   *Who introduced Bill to Sue? – Peter$_F$ introduced Bill to Sue.*

- **My dissertation**: Berezovskaya (2020) looked at comparison constructions in TN (degree modification), Russian (inventory of comparison operators) and German (experiments on attributive comparatives)
- **Empirical scope of my work**: fieldwork on Nenets, Russian and language experiments

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2. Degree Semantics

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2. Degree Semantics

- Proponents of the degree approach, the 'standard approach' (cf. e.g. von Stechow 1984, Heim 1985,2001, Beck 2011) assume degrees to be primitives in the semantic ontology (type <d>)
- They can be considered as being reconstructed from equivalence classes of individuals (Cresswell 1976) according to the intuition that degrees are points on a scale.

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2. Degree Semantics – Basic Theoretic Notions

• I rely on the **notion of degrees** as being an own semantic type *d* in the semantic ontology. Degrees are "highly abstract entities" (von Stechow 1984: 47). They are "equivalence classes generated by a comparative relation" (von Stechow 2008).

• The **notion of a scale** is also essential. Basically, degrees are points on a totally ordered scale. The definition (again cf. Beck 2011, p. 1343, from von Stechow 2005) is in (4).

(4) Call each such pair $(X, >_X)$ a scale.
    Properties of orders: $>_X$ is total on X, asymmetric, transitive, irreflexive.

• I assume that **gradable adjectives** like tall, heavy etc. are of type $<d,<e,t>>$, i.e. they relate individuals with sets of degrees (cf. von Stechow 1984, Beck 2011), like, for instance, the degrees of weight that they reach. Importantly, they introduce the degree into the semantics.

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2. Degree Semantics – Basic Theoretic Notions

- What it means for a language to integrate degrees into the grammar more concretely is to have gradable adjectives of the following type:

(5) $[[tall]] = \lambda d.\lambda x.\text{HEIGHT}(x) \geq d = \lambda d.\lambda x.$ x is d-tall

    In prose: this predicate takes an individual and maps it to a degree on the height scale

- It is through the gradable adjective that the degree is introduced into the semantics. DiffC and CompDeg are good diagnostics for degree semantics, according to Beck et al. (2009).

2. Degree Semantics – An Example

- **Ingredient 1:** Dimension (expressed by the gradable adjective)

$$[[\ tall\ ]] = \lambda d_{<d>}.\ \lambda x_{<e>}.\ \text{HEIGHT}(x) \geq d$$

- **Ingredient 2:** Degree operators (expressed by degree morphology)

$$\text{e.g.}\ [[\ \text{-}er_{\text{Heim(1985)}}\ ]] = \lambda y_{<e>}.\ \lambda R_{<d,<e,t>>}.\ \lambda x_{<e>}.$$
$$\text{MAX}(\lambda d.R(d)(x)) > \text{MAX}(\lambda d'.R(d')(y))$$

- **Ingredient 3:** two individuals (e.g. Masha, Vanya) (+ differential)

differential degree

(6) *Masha* is *15cm* taller than *Vanya*.

associate

standard of comparison

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2. Degree Semantics – An Example

(6) *Masha is 15cm taller than Vanya.*

(6') LF: [IP [DegP $_{<<d,t>,t>}$ [15cm] [COMP [than how$_1$ [Vanya is t$_{1,d}$ tall]]]] [$_{<d,t>}$ 2 [Masha is t$_{2,d}$ tall.]]]

- Resulting truth conditions using a clausal comparative operator with a differential degree:

(6") „The maximal degree of height that Masha reaches is 15cm plus the maximal degree of height that Vanya reaches. "
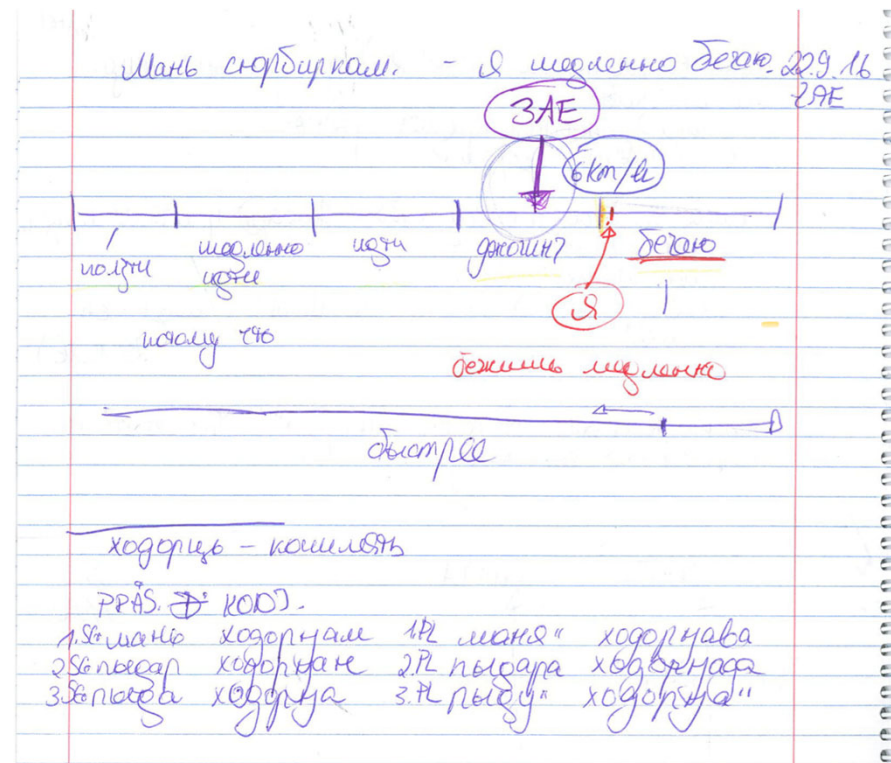
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3. Fieldwork on Tundra Nenets

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3. Fieldwork on Tundra Nenets – Fieldwork Methodology

Elicitation Techniques
- corpus examples
- translation tasks
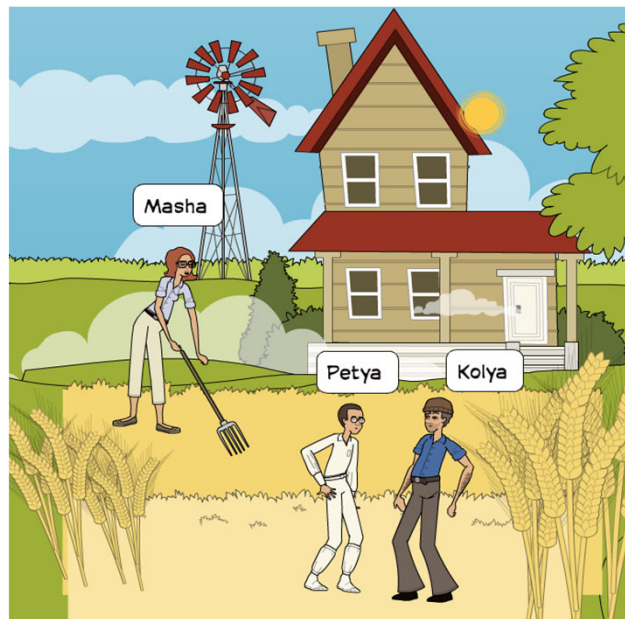- acceptability judgment tasks

Matthewson (2004, 2011)
Bowern (2008)
Chelliah and de Reuse (2011)

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3. Fieldwork on Tundra Nenets – Fieldwork Methodology

Elicitation Techniques

Машари манзара.

Is this an acceptable reply to the question in this situation?

☑ Yes
☐ Maybe
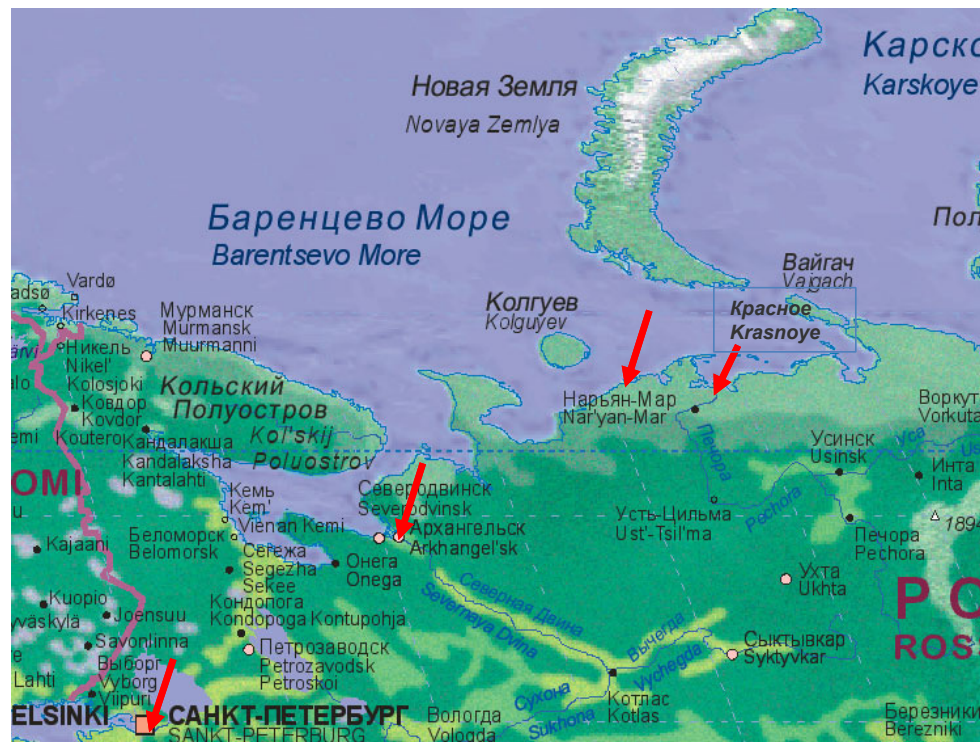☐ No

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3. Fieldwork on Tundra Nenets – My Fieldwork

- All the data on Tundra Nenets stems from original fieldwork conducted during four fieldwork trips from February 2014 to to September 2016
- In September 2014, I ventured out to **Arkhangelsk** and **Naryan-Mar**, the capital of the Nenets Autonomous Okrug (NAO) where my primary informant lives.
- In September 2015, a trip to **St. Petersburg** followed.
- In September 2016, I went back to Naryan-Mar. The following map illustrates my loci of fieldwork

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3. Fieldwork on Tundra Nenets – My Fieldwork

Source of the map: wissenladen.de

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3. Fieldwork on Tundra Nenets – My informants

Subdialects	- „Kanine" - Malaya Zemlya - Bol'shaya Zemlya - Yamal
Time and place	- February 2014: Arkhangelsk + in Saint Petersburg (Institute of the Peoples of the North, Herzen State Pedagogical University) - September 2014, September 2016: Naryan-Mar, NAO - March 2014, September 2015: Saint Petersburg
Native speakers	- 19 native speakers in total from Naryan-Mar, Arkhangelsk & St. Petersburg - 17 female and 2 male informants between 19-77 years of age (mean age: 44 years) - All were (at least) biligual TN and Russian speakers

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3. Fieldwork on Tundra Nenets – TN language

Ethnologue:

- **Population**: 21,900 (2010 census), 25.000 speakers (Chrystal 1993:304). Ethnic population: 44,600 (2010 census).
- **Location**: Northwest Siberia, **north Dvina river** mouth tundra area to Yenisei river delta, scattered in **Kola** peninsula; **Nenetskiy Avtonomnyy Okrug**, Yamalo-Nenetskiy Avtonomnyy Okrug, and Khanty-Mansiyskiy Avtonomnyy Okrug; also in Krasnoyarskiy Kray, Komi, and **Arkhangel'skaya Oblast'.**
- **Language Status**: 6b (Threatened).
- **Classification**: Uralic, Samoyed, Nothern Samoyed
- **Dialects**: Forest Yurak, Tundra Yurak.
- **Language Use**: In Siberia most young people are still fluent in the language. On the European side, very few children learn it; young people tend to prefer Russian [rus] and most speakers are middle-aged or older (Salminen 2007). A few to half of children speak Nenets. Positive attitudes. In Siberia, many school-age children also use Russian [rus]. Used as L2 by Komi-Zyrian [kpv].
- **Writing**: Cyrillic script [Cyrl].
- **Other Comments**: Mainly nomadic (in my experience: not anymore!). Christian, traditional religion.

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3. Fieldwork on Tundra Nenets – TN language

Brief sketch of TN grammar:

- Nenets belongs to the the Uralic language family which has two branches, the Finno-Ugric and the Samoyedic languages. TN belongs to the latter.
- Nenets is a highly agglutinative language, i.e. grammatical functions are mostly marked as suffixes on words
- The two main syntactic categories are verbs and nouns with some smaller classes like personal pronouns, adverbs, adjectives and postpositions.
- "The distinction between nouns and adjectives is weak, as is that between adjectives and adverbs." (Suihkonen 2002: 171)

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3. Fieldwork on Tundra Nenets – TN language

Brief sketch of TN grammar:

<u>Nouns.</u>

- the noun is inflected for number, case, absolutive and non-absolutive declension (person and number of the possessor or predestinator)
- there is no grammatical category for gender, for instance *pyda to* means 'he/she arrived'. However, there is the distinction between the 'genus humanum' and the 'genus non humanum', i.e. there are personal and 'non-personal' pronouns
- in terms of the number system ("Numerus"), there exists the singular, the **dual** and the plural
- personal suffixes and even tense suffixes can be added to the noun root

3. Fieldwork on Tundra Nenets – TN language

Brief sketch of TN grammar:

<u>Verbs.</u>

- the verb is inflected for mood, tense, number of objects (there is object agreement in TN), person and number of the subject (subject agreement)
- there are between 10 and 16 grammatical moods (!!!)
- there is no distinction between the active and the passive voice

3. Fieldwork on Tundra Nenets – TN language

Brief sketch of TN grammar:

Word order.

• word order in TN in a regular transitive sentence:

(Time adverbial)-subject NP-(place adverbial)-indirect object NP-object NP-(manner adverbial)-verb. (cf. e.g. Salminen 1998, Nikolaeva 2014: 214)

• **head-final** (there are postpositions, for instance)

• According to Nikolaeva (2014), informationally new (focus) element immediately precedes the verb and the informationally old (topical) element comes before the new element, such that we get the order:

<div align="center">Topic Focus Verb.</div>

• a lot of positional freedom for non-verbal elements.

• TN has characteristics of a pro-drop language.

→**SOV** as the canonical word order

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Overview

1. Introduction

2. Degree Semantics

3. Fieldwork on Tundra Nenets

4. **Degree Restriction in Nenets**

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4. Degree Restriction in Nenets

4.1. Role of the suffix *-rka*

4.2. Analysis of a comparative w/o *-rka*

4.3. Analysis of TN comparatives with *-rka*

A little bit taller, taller or just tall?

4. Degree Restriction in TN – Comparatives in TN

- The standard of comparison is always ablative-marked.
- The gradable adjective stands in its basic form, though it can be marked by the suffix *-rka*.
- Example (7) shows a comparison between two individuals with *-rka* present on the adjective.

(7) *Katya Masha-xad   pirc'a-rka.*
Katya Masha-ABL. tall-RKA
'Katya is a little taller than Masha.'

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4.1. The role of the suffix *–rka* in Comparisons

- This suffix is reported to be optional in comparatives by Nikolaeva (2014), among others.
- Tereshchenko (1947) marks what she takes to be the comparative form of the adjective with the suffix *-rka* as well.
- Décsy (1966) classifies *-rka* as an adjectival suffix which can mark "incompleteness of quantity" (i.e. *veva* ('bad') - *vevarka* ('slighty, somewhat bad')) and which in addition can also be used for comparison.

> **The status and meaning contribution of *-rka* in comparisons is not clear in the descriptive literature!**

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4.1. The role of the suffix *-rka*

(8) *Ты*   *вэнекоход*   *пирцярка.*
     ty   *wen'e-kohod*   *pirc'a-rka*
     reindeer   dog-ABL   tall-rka
     'The reindeer is a little taller than the dog.'

Comment: „The speaker is not quite sure.“

(9) *Катя*   *Машахад*   *ӈаркавна*   *пирця/* [#]*пирцярка.*
     Katya   *Masha-had*   *ŋarkavna*   *pirc'a /* [#]*pirc'a-rka*
     Katya   Masha-ABL   a.lot   tall/ [#]tall-rka
     'Katya is much taller than Masha.'

Comment: „If there is a big difference in heights, you cannot use *-rka*.“

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4.1. The role of the suffix *-rka*

(10)   **Context**: Katya is taller than Masha.

Катя   пирця.
Katya   pirc'a
Katya   tall
'Katya is taller.'
 Comment: „This is neutral for 'taller'."

→In (10), it is clearly **not** the suffix *-rka* that introduces the comparison!

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4.1. The role of the suffix *-rka*

(11) *Polka sind'etyuh santimetr-xad jamb(-rka).*
Shelf eighty   cm-ABL.   long-(-RKA)
'The shelf is a little longer than 80cm.'

Comment by informant: "If we add the ending *-rka*, we want to make clear that the shelf is a little longer."

(12) Katya is 1.45m tall, while Tanya is 1.43m tall.

   a. *Tanya Katya-xad n'ud'a.*
      Tanya Katya-ABL. small.
      'Tanya is smaller than Tanya.'

   b. *Tanya Katya-xad n'ud'a-rka.*
      Tanya Katya-ABL. small-RKA
      'Tanya is a little smaller than Tanya.'

→ Even when changing the polarity of the adjective as in (12), *-rka* marks a small difference between the two individuals

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4.1. The role of the suffix *-rka*

➢ When there is the ablative marking of the standard of comparison, and the suffix *-rka* is used, *-rka* has the meaning of „a little".

➢ In cases of a contextual comparison (*Katya pirc'arka.*), the role of *-rka* is still to be explored further (cf. Berezovskaya 2020 for a suggestion).

➢ My fieldwork data suggest that *-rka* is used if there is a small difference between the associate ('Katya' in (9)) and the standard of comparison ('Masha' in (9)).

> **This optional suffix -rka cannot be the comparative marker, i.e. there is no overt morphological marking on the comparative in Nenets.**

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4.2. Analysis of a comparative w/o *-rka*

- Nenets shows a lack of clausal standards:

(13) a. *Ichin'an*   *maʔm*   *t'uku jal'a jiba-rka.*
Mind-LOC-1SG   say-1SG   this day warm-RKA
Literally: 'In my mind I say: this day is warmer.'
Intended: 'Today it is a little warmer than I thought.'
Comment: „I don't know hot to say „чем я думала" ('than I thought'). *Chem* is in the way here.

(14) a. **T'uku jal'a* [ADV.*t'en'ana*] *t'et'e-rka.*
This   day yesterday   cold-RKA

    b. *Tjuku jal'a* [NP*tej-xad*]   *tete-rka.*
this day yesterday's-ABL. cold-RKA
Literally: 'This day is colder than yesterday's ('der Gestrige' in German).'
'Today it is colder than yesterday.'

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4.2. Analysis of a comparative w/o *-rka*

➢Avoidance of clausal structures, paraphrases instead

➢A phrasal analysis under which all comparatives are analyzed as not being reduced from a clausal source (cf. Heim 1985) is plausible for TN.

4.2. Remember from before:

- **Ingredient 1:** Dimension (expressed by the gradable adjective)

$$[[\textit{pirc'a} \text{ ('tall')}]] = \lambda d_{<d>}. \lambda x_{<e>}. \text{HEIGHT}(x) \geq d = \lambda d_{<d>}. \lambda x_{<e>}. x \text{ is d-tall}$$
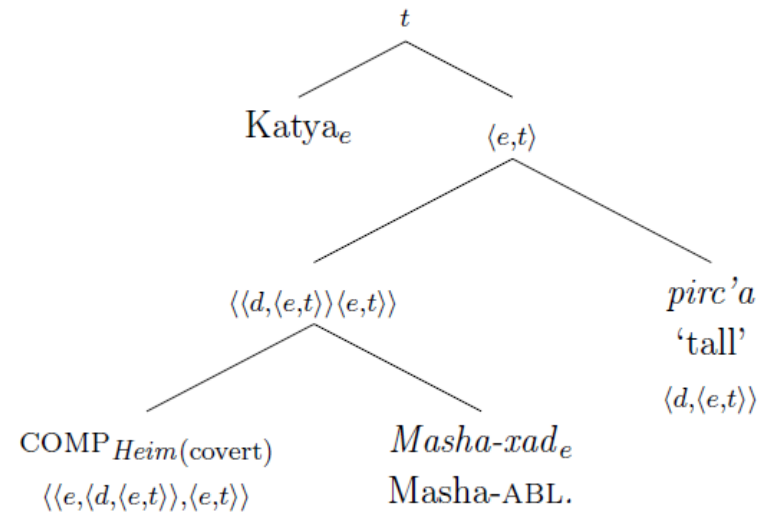
- **Ingredient 2:** Degree operators (expressed by degree morphology)

$$\text{e.g. } [[\textit{-er}_{\text{Heim}(1985)}]] = \lambda y_{<e>}. \lambda R_{<d,<e,t>>}. \lambda x_{<e>}.$$
$$\text{MAX}(\lambda d.R(d)(x)) > \text{MAX}(\lambda d'.R(d')(y))$$

- **Ingredient 3:** two individuals (e.g. Masha, Vanya) (+ differential)

4.2. Analysis of a comparative w/o *-rka*

(15) *Катя   Машахад   пирця.*
     Katya   *Masha-had   pirc'a*
     Katya   Masha-ABL   tall
     'Katya is taller than Masha.'

$$[[15]] = \text{MAX}(\lambda d.\ \text{HEIGHT}(\text{Katya}) \geq d) > \text{MAX}(\lambda d'.\ \text{HEIGHT}(\text{Masha}) \geq d')$$

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4.3. Analysis of TN comparatives with *-rka*

- the following Differential Comparative (DiffC) is in the center of attention for the analysis

(16) *Katya Masha-xad   saml'aŋ santimetra-nh pirc'a-rka.*
Katya Masha-ABL. five   cm-DAT.   tall-rka
'Katya is 5 cm taller than Masha.'

- It is established in the context that 5cm is considered a small difference
- In (16), there is an overt differential degree, namely 5cm

> **This example rules out the possibility of *-rka* filling the differential degree or an operator quantifying it off, since that argument is already saturated by '5cm'**

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4.3. Analysis of TN comparatives with *-rka*

- I assume that *-rka* modifies the differential argument ➔ *-rka* is a degree modifier stating that the difference is small
- Replicating the effect in English:

(17) **Katya is 5cm a little taller than Masha.*

- The analysis will include restriction in the degree domain in the spirit of Chung & Ladusaw's (2004) **RESTRICT** used for examples like (I use English for illustration). In (19), the result of this compositional step is illustrated.

(18) **John dog-fed Fido.*

(19) $[\![dog\text{-}fed]\!] = \lambda y.\lambda x.x \text{ fed } y \wedge y \text{ is a dog} = fed'(y)(x) \wedge dog'(y)$

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4.3. Analysis of TN comparatives with *-rka*

Underlying structure for (16):

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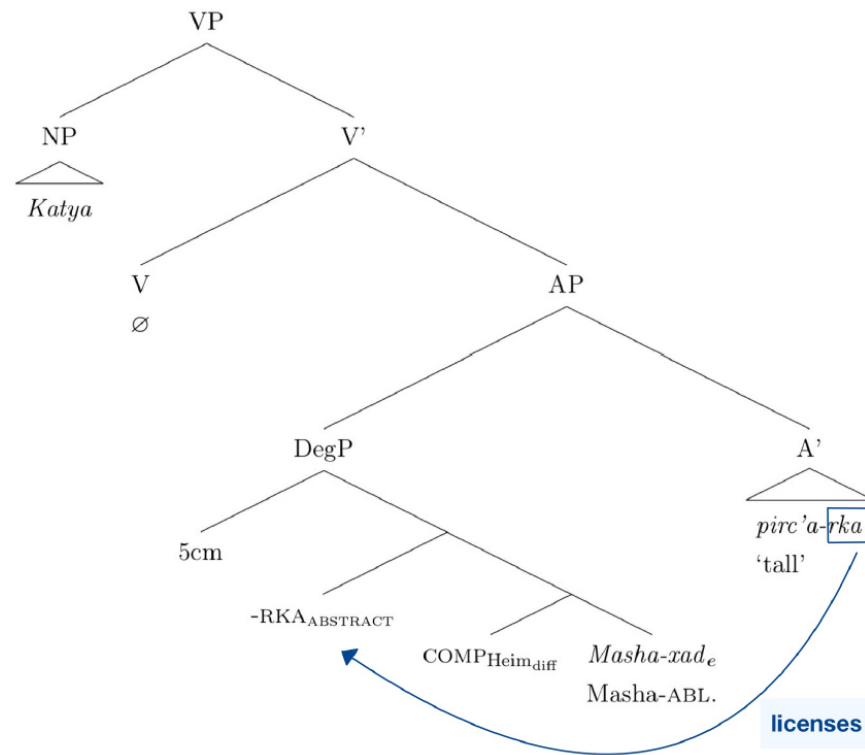
4.3. Analysis of TN comparatives with *-rka*

LF for (16):
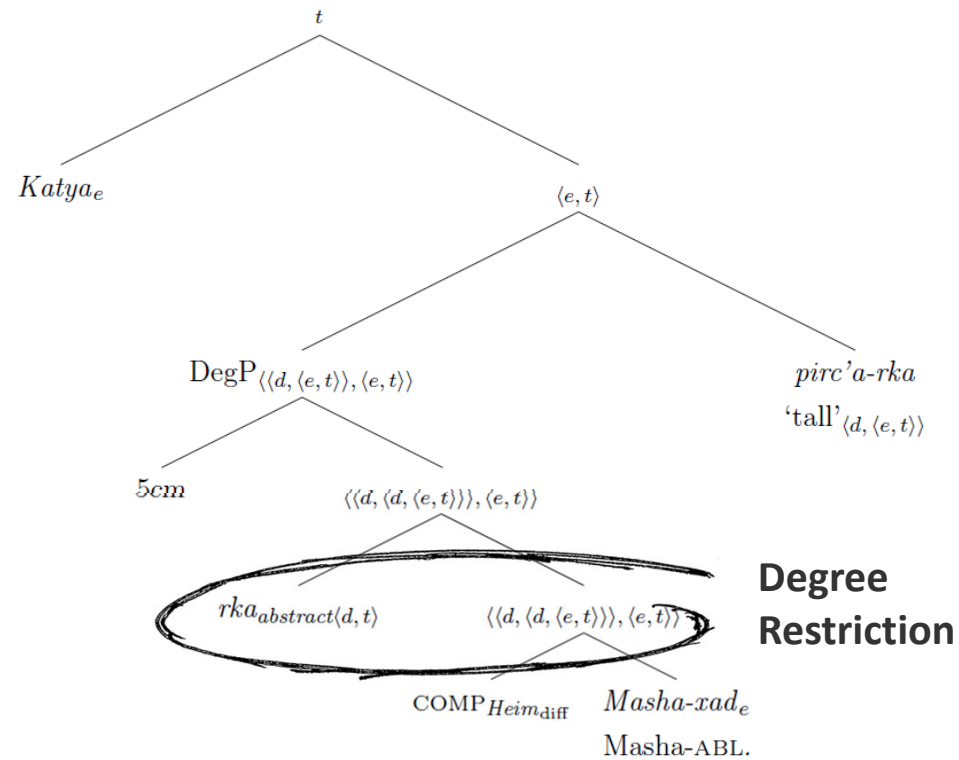
4.3. Analysis of TN comparatives with *-rka*

Rule for Degree Restrict (DR):

(20) If α is a branching node and $\{\beta, \gamma\}$ the set of its daughters, then for any assignment g, α is in the domain of $[\![\ ]\!]^g$ if both β and γ are, and β is of type $\langle d, t \rangle$ and γ is of type $\langle \langle d, \langle d, \langle e, t \rangle \rangle \rangle, \langle e, t \rangle \rangle$, then:

$[\![\alpha]\!]^g = \lambda d_d.\lambda R_{\langle d, \langle e, t \rangle \rangle}.\lambda x_e.\ [\![\gamma]\!]^g(d)(R)(x){=}1 \wedge [\![\beta]\!]^g(d){=}1.$

shorter version:

If $\alpha = \{\ \overset{\frown}{\beta \quad \gamma}\ \}$, and $[\![\beta]\!]^g \in D_{\langle d, t \rangle}$ and $[\![\gamma]\!]^g \in D_{\langle \langle d, \langle d, \langle e, t \rangle \rangle \rangle, \langle e, t \rangle \rangle}$, then:

$[\![\alpha]\!]^g = \lambda d_d.\lambda R_{\langle d, \langle e, t \rangle \rangle}.\lambda x_e.\ [\![\gamma]\!]^g(d)(R)(x){=}1 \wedge [\![\beta]\!]^g(d){=}1.$

- This rule is designed specifically for phrasal comparatives using Heim's degree operator. It can be accommodated for clausal or other phrasal comparatives:

  For any type α this will give us:

  $$\langle d, \langle \alpha, t \rangle \rangle + \langle d, t \rangle = \langle d, \langle \alpha, t \rangle \rangle$$

4.3. Analysis of TN comparatives with *-rka*

- Lexical entries:

(21) a. $[\![-rka_{\mathrm{abstract}}]\!]^c = \lambda d.d$ is small_c

b. $[\![\,\mathrm{COMP}\ (\mathrm{Heim}_{\mathrm{diff}})\,]\!] = \lambda y_e.\lambda d_{\mathrm{diff}d}.\,\lambda R_{\langle d,\langle e,t\rangle\rangle}.\,\lambda x_e.\ \mathrm{MAX}(\lambda d'.\,R(d')(x)) \geq$
$$\mathrm{MAX}(\lambda d''.\,R(d'')(y)) + d_{\mathrm{diff}}$$

c. $[\![\,pirc'a\,]\!] = \lambda d.\lambda x_e.\ \mu_{height}(x) \geq d$

- Semantic composition of (16), crucial step:

(22) $[\![\,[\mathbf{rka_{abstract}}[\mathrm{COMP}_{(Heim_{\mathrm{diff}})}Mashaxad]]\,]\!] = \lambda d_{\mathrm{diff}}.\lambda R_{\langle d,\langle e,t\rangle\rangle}.\lambda x.$
$$\mathrm{MAX}(\lambda d'.R(d')(x)) \geq \mathrm{MAX}(\lambda d''.R(d'')(Masha)) + d_{\mathrm{diff}} \wedge \mathbf{d_{diff}}\text{ is }\mathbf{small_c}$$

$$\text{(via } \textsc{Degree Restriction (DR)})$$

Resulting truth conditions for (16):

(23) $\mathrm{MAX}(\lambda d'.\mathrm{HEIGHT}(\mathrm{Katya}) \geq d') > \mathrm{MAX}\,(\lambda d''.\mathrm{HEIGHT}(\mathrm{Masha}) \geq d'') + 5\mathrm{cm} \wedge 5\mathrm{cm}$ is small_c

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Overview

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5. Cross-linguistic outlook

- DR opens up new paths for a global grammatical generalization that motivates it
- The questions DR in TN opens up are:

  ❖ Q1: Where is this mode of composition available and which restrictions is it subject to?

  ❖ Q2: Is Restriction a mode of composition that human languages have in every semantic domain, i.e. the domain of individuals, events, times, degrees etc.?

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5. Cross-linguistic outlook

❖ Q1: Where is this mode of composition available and which restrictions is it subject to?

- It is known from literature on noun incorporation (cf. Mithun (1984), C&L 2004) that languages like Chamorro (Sadock 1980) have a **strong version of noun incorporation (NI)**: an autonomous stem is incorporated into the verb, cf. *John dog-fed Fido.*
- There are also languages like Greenlandic where no extra noun can be incorporated, but where the verb has some kind of predicate incorporated in its stem (cf. English *to baby-sit*). I call it **light NI**.

5. Cross-linguistic outlook

❖ Q1: Where is this mode of composition available and which restrictions is it subject to?

• I suggest that there is also a light and strong version of Degree Incorporation (DI). Preliminary cross-linguistic data motivates this hypothesis:

	Noun Incorporation (NI)	Degree Incorporation (DI)
"light"	No extra noun ex. *John dog-fed.* e.g. in Greenlandic (C&L 2004: 89)	Comp. with DiffMod[1] ex. *Peter is taller*-DIFFMOD *than Mary.* e.g. in Japanese (with *motto*)
"strong"	Extra noun present ex. *John dog-fed Fido.* e.g. in Chamorro (Sadock 1980: 308)	DiffC + DiffMod ex. *Peter is 3cm taller*-DIFFMOD *than Mary.* e.g. in TN (with *-rka*)

[1] DiffMod stands for a differential modifier such as *-rka*.

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5. Cross-linguistic outlook

Strong vs. Light NI in Chamorro vs. Greenlandic

(24) <u>Chamorro</u> (C & L 2004: 89)

Gäi-[ga'] **un ga'lagu** *ennao na patgun.*
Agr.have-pet a dog that L child
'That child has a pet dog.'

(25) <u>Greenlandic</u> (Sadock 1980: 308)

Kusanartunik *sapangarsivoq.*
beautiful-NOM.-PL.-INSTR. bead-get-INDIC.-3.SG
'He bought beautiful beads.'

	Noun Incorporation (NI)	Degree Incorporation (DI)
"light"	No extra noun ex. *John dog-fed.* e.g. in Greenlandic (C&L 2004: 89)	Comp. with DiffMod ex. *Peter is taller-*DIFFMOD *than Mary.* e.g. in Japanese (with *motto*)
"strong"	Extra noun present ex. *John dog-fed Fido.* e.g. in Chamorro (Sadock 1980: 308)	DiffC + DiffMod ex. *Peter is 3cm taller-*DIFFMOD *than Mary.* e.g. in TN (with *-rka*)

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5. Cross-linguistic outlook

Strong vs. Light DI in TN vs. Japanese

(26) **Context:** Someone says that he thinks that Mary is 5ft and John is just slightly taller than that. The speaker shakes his head and says:

a. *Uun, John-wa   Mary-yorimo **motto** se-ga   takai*
   no   John-TOP. Mary-than   even   height-NOM. tall
   yo.
   sentence.ending.particle
   'No no, John is much taller than Mary.'

- in Japanese, DiffCs exist:

(27) DiffC

Sally-wa   Joe yori   5cm se-ga   takai.
Sally-TOP Joe YORI 5cm back-NOM. tall
'Sally is 5cm taller than Joe.'   (Beck et al. 2009: appendix, p. 6)

- Adding *motto* makes the DiffC infelicitous, see next slide!

5. Cross-linguistic outlook

Strong vs. Light DI in TN vs. Japanese

(28) <u>TN</u> (Berezovskaya 2020)

Katya Masha-xad   saml'aŋ santimetra-nh pirc'a-rka.
Katya Masha-ABL. five   cm-DAT.   tall-rka
'Katya is 5 cm taller than Masha.'

(29) Japanese (Toshiko Oda's judgments)

[??]*Sally-wa Joe yori   5cm* **motto** *se-ga   takai.*
Sally-TOP Joe YORI 5cm motto height-NOM. tall

	Noun Incorporation (NI)	Degree Incorporation (DI)
"light"	No extra noun ex. *John dog-fed.* e.g. in Greenlandic (C&L 2004: 89)	Comp. with DiffMod ex. *Peter is taller-*DIFFMOD *than Mary.* e.g. in Japanese (with *motto*)
"strong"	Extra noun present ex. *John dog-fed Fido.* e.g. in Chamorro (Sadock 1980: 308)	DiffC + DiffMod ex. *Peter is 3cm taller-*DIFFMOD *than Mary.* e.g. in TN (with *-rka*)

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5. Cross-linguistic outlook

Strong vs. Light DI in TN vs. Japanese

> According to our mini-typology, TN might have the strong version of DI, while Japanese might only display the light version of DI.

	Noun Incorporation (NI)	Degree Incorporation (DI)
"light"	No extra noun ex. *John dog-fed.* e.g. in Greenlandic (C&L 2004: 89)	Comp. with DiffMod² ex. *Peter is taller*-DIFFMOD *than Mary.* e.g. in Japanese (with *motto*)
"strong"	Extra noun present ex. *John dog-fed Fido.* e.g. in Chamorro (Sadock 1980: 308)	DiffC + DiffMod ex. *Peter is 3cm taller*-DIFFMOD *than Mary.* e.g. in TN (with *-rka*)

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5. Cross-linguistic outlook

- DR opens up new paths for a global grammatical generalization that motivates it
- The questions DR in TN opens up are:

  ❖ Q1: Where is this mode of composition available and which restrictions is it subject to?

  ❖ Q2: Is Restriction a mode of composition that human languages have in every semantic domain, i.e. the domain of individuals, events, times, degrees etc.?

5. Cross-linguistic outlook

❖ Q2: Is Restriction a mode of composition that human languages have in every semantic domain, i.e. the domain of individuals, events, times, degrees etc.?

- This principle finds itself in very good company with **Event Identification** in the domain of **events** and Restrict in the domain of **individuals**.
- In fact, this kind of operation also exists in the domain of **times**, type i.
- For instance, Hohaus (2019) calls it Extended Predicate Modification. She uses it to compose a noun with a relative clause. Her rule looks as follows:

(30)

If α is a branching node and β and γ its daughters, $\beta \in D_{\langle i, \langle e, t \rangle \rangle}$ and $[\![\gamma]\!] \in D_{\langle e, t \rangle}$, then $[\![\alpha]\!] = \lambda t_{\langle i \rangle}.\lambda x._{\langle e \rangle}.[[\![\beta]\!](t)(x) = 1 \ \& \ [\![\gamma]\!](x) = 1]$.   (Hohaus 2019: 45, fn.2).

5. Cross-linguistic outlook

❖ Q2: Is Restriction a mode of composition that human languages have in every semantic domain, i.e. the domain of individuals, events, times, degrees etc.?

- The following table illustrates the parallels between the four operations in the different domains:

	higher-type function f	lower-type function g	function after OPERATION: h
events	$\langle e, \langle v, t \rangle \rangle$	$\langle v, t \rangle$	$\langle e, \langle v, t \rangle \rangle$
individuals	$\langle e, \langle e, t \rangle \rangle$	$\langle e, t \rangle$	$\langle e, \langle e, t \rangle \rangle$
times	$\langle i, \langle e, t \rangle \rangle$	$\langle e, t \rangle$	$\langle i, \langle e, t \rangle \rangle$
degrees	$\langle d, \langle \alpha, t \rangle \rangle$	$\langle d, t \rangle$	$\langle d, \langle \alpha, t \rangle \rangle$

5. Cross-linguistic outlook

- parallel to Predicate Modification, PM (from Heim & Kratzer 1998): well-established composition rule
- principles like RESTRICT, DEGREE RESTRICT and EI show that PM needs to be more flexible

→ should be a general part of natural languages, a **generally availble mechanism!**

	higher-type function f	lower-type function g	function after OPERATION: h
events	$\langle e, \langle v, t \rangle \rangle$	$\langle v, t \rangle$	$\langle e, \langle v, t \rangle \rangle$
individuals	$\langle e, \langle e, t \rangle \rangle$	$\langle e, t \rangle$	$\langle e, \langle e, t \rangle \rangle$
times	$\langle i, \langle e, t \rangle \rangle$	$\langle e, t \rangle$	$\langle i, \langle e, t \rangle \rangle$
degrees	$\langle d, \langle \alpha, t \rangle \rangle$	$\langle d, t \rangle$	$\langle d, \langle \alpha, t \rangle \rangle$

Overview

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6. Concluding remarks and discussion

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6. Concluding remarks and discussion

- Further cross-linguistic research could uncover a general mechanism that I call Degree Restrict of natural language and give us deeper insight into the inner workings of grammar
- It is not only that this new rule solves an immediate composition problem.
- I believe that the grammatical generalizations that motivate it are of interest for future cross-linguistic research on incorporation across different semantic domains (the domain of individuals, times, events,but also degrees).

Hypothesis: Degree predicate modification in Nenets comparatives provides evidence for Degree Restriction in natural language

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6. Concluding remarks and discussion

- Investigation of a tiny morpheme *-rka* in an endangered and under-investigated language brought the principle of DR to light
→ This shows how fieldwork on threatened, underrepresented and not well documented languages can provide valuable insights for theory building.

- I vouch for a strong empirical perspective in any theoretically-driven enterprise!
- As long as our theory building is centered around selected, mostly Indo-European languages, we cannot claim enough universality and strength for our theory.
→ **Upshot**: more cross-linguistic studies and fieldwork needed!

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Ӈарка вада!

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Abbreviations in Glosses

ABL	ablative case		PST.	past
ACC.	accusative case		PERF.	perfective
DAT.	dative case		PL.	plural
GEN.	genitive case		POSS.	possessive
INSTR.	instrumental case		PREP.	preposition
LOC.	locative case		PRN.	pronoun
NEG.	negation		PROG.	progressive
NOM.	nominative case		SG.	singular

Acknowledgments
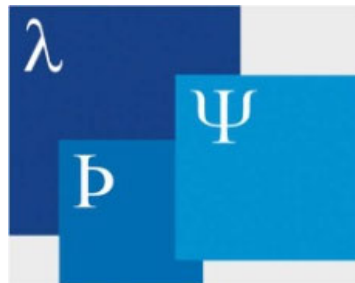
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Q & A

• Could *-rka* be operating on the non-assertional level, i.e. for instance triggering a presipposition?

• Preliminary data from TN show that this is highly unlikely:

(i) *Taremh ni ŋa", Katya Tanya-xad pirc'a-rka.*
So NEG Katya Tanya-ABL. tall-RKA
Intended: 'It is not the case that Katya is a little taller than Tanya.'

<u>Assertion: of (i)</u>: Is is not the case that Katya is taller than Tanya.
<u>PSP of (i)</u>: the difference between the heights is small

• Response by informants: The whole gradable predicate including *-rka* is negated

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Q & A

Event Identification (EI) by Kratzer (1994, 1996):

- like RESTRICT with events
- Idea: external arguments (i.e. subjects) are not arguments of the verb.
- (EI) allows one to add various conditions to the event that the verb describes; Voice, for example, adds the condition that the event has an agent.
- It is also a conjunction operation and works as follows:

(ii)

f	g	→	h
$\langle e, \langle v, t \rangle \rangle$	$\langle v, t \rangle$	→	$\langle e, \langle v, t \rangle \rangle$
			$\lambda x_{\mathrm{e}}.\lambda e_{\mathrm{v}}.f(x)(e) \wedge g(e)$