Using TerraLing to investigate the semantic typology of conjunction

Nina Haslinger (University of Göttingen) & Viola Schmitt (University of Graz)

TerraLing workshop
September 18-19, 2020
Point of this talk

• Sketch one of the research questions from our former project 'Conjunction and disjunction from a typological perspective' (2016-19, FWF)

• Project website: https://www.univie.ac.at/konjunktion/

• TerraLing group: https://www.terraling.com/groups/8

• Other members: Enrico Flor, Valentin Panzirsch, Eva Rosina, Magdalena Roszkowski, Valerie Wurm

• First semantic project using TerraLing

• Focus on how we targeted the questions via TerraLing (some good features of our methodology, some things we could have done better)

• Sketch one of the results

• Relate it to our ongoing work
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• Relate it to our ongoing work
1. Research questions: Example

2. Why we decided to use TerraLing – advantages and pitfalls

3. Structure of our questions and definitions

4. Some generalizations from our data set
Q: Distributive vs. non-distributive conjunction

DISTRIBUTIVE SCENARIO: Ada and Bea received exactly 100 euros. Ada received 100 euros. Bea received 100 euros.⇒ ‘received exactly 100 euros’ holds of each individual picked out by a conjunct.

Non-distributive interpretations

COLLECTIVE SCENARIO: Ada and Bea translated an article together. As a team, they received 100 euros for the translation. Individuals picked out by conjuncts have the property ‘received exactly 100 euros’ as a group.

CUMULATIVE SCENARIO: Ada and Bea spent the afternoon working at a store. Ada received 60 euros. Bea received 40 euros. Individuals picked out by conjuncts have properties that ‘add up’ to receiving exactly 100 euros.
Q: Distributive vs. non-distributive conjunction

(1) Ada and Bea received exactly 100 euros.
Q: Distributive vs. non-distributive conjunction

(1)  *Ada and Bea received exactly 100 euros.*

**Distributive interpretation**

‘**Distributive**’ scenario: Ada and Bea spent the afternoon working at a store. Ada received 100 euros. Bea received 100 euros.

⇒ [*received exactly 100 euros*] holds of each individual picked out by a conjunct.
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‘Collective’ scenario: Ada and Bea translated an article together. As a team, they received 100 euros for the translation.

Individuals picked out by conjuncts have the property [\textit{received exactly 100 euros}] as a group.
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Individuals picked out by conjuncts have properties that ‘add up’ to receiving exactly 100 euros.
Q: Distributive vs. non-distributive conjunction

In many cases, it's not clear if there are two distinct readings or a single weak reading. For example, Ada and Bea read the books.

The DISTRIBUTIVE interpretation entails the CUMULATIVE one.

But the readings can be distinguished if we use predicates with measure phrases (e.g., 100 euros, 10 meters) or numeral-modified plurals (e.g., five bananas, ten books).

Ada and Bea earned 100 euros.

With modifiers that impose both upper and lower bounds (e.g., exactly 100 euros, exactly five bananas), the two readings become logically independent.

Counterarguments for English (Dowty 1987)

Ada and Bea met at the bar and had exactly two beers. Met at the bar requires a non-distributive reading, but had exactly two beers still permits both readings.
Two distinct readings?

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Lexical ambiguity of and?

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Two distinct readings?
• In many cases not clear if there are two distinct readings or a single weak reading.

(2) Ada and Bea read the books.

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Q: Distributive vs. non-distributive conjunction

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• But the readings can be distinguished if we use predicates with measure phrases (100 euros, 10 meters) or numeral-modified plurals (five bananas, ten books).

(3) Ada and Bea earned 100 euros.
Q: Distributive vs. non-distributive conjunction

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Two distinct readings?
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(2)  *Ada and Bea read the books.*

The distributive interpretation entails the cumulative one.
• But the readings can be distinguished if we use predicates with measure phrases (100 euros, 10 meters) or numeral-modified plurals (five bananas, ten books).

(3)  *Ada and Bea earned 100 euros.*

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Lexical ambiguity of and?
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Two distinct readings?

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  (2)  *Ada and Bea read the books.*

  The **DISTRIBUTIVE** interpretation entails the **CUMULATIVE** one.

- But the readings can be distinguished if we use predicates with measure phrases *(100 euros, 10 meters)* or numeral-modified plurals *(five bananas, ten books)*.

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- With modifiers that impose both upper and lower bounds *(exactly 100 euros, exactly five bananas)*, the two readings become logically independent.

Lexical ambiguity of *and*?

Counterargument for English (Dowty 1987)

(4)  *Ada and Bea met at the bar and had exactly two beers.*

*Met at the bar* requires non-distributive reading, but *had exactly two beers* still permits both readings.
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Null hypothesis

Conjunctive coordinators that syntactically behave like *and* have a **unified** meaning cross-linguistically ⇒ no lexical distributive/non-distributive ambiguity

Matthewson 2001, Bochnak 2013: strongest possible null hypothesis = no variation
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**Note:** Does not mean all languages have coordinators that behave like *and*
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Distributive-quantifier hypothesis

Conjunctive coordinators lexically form distributive generalized quantifiers.

\(\Rightarrow\) DISTRIBUTIVE reading derived directly; NON-DISTRIBUTIVE reading requires additional operators.
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Distributive-quantifier hypothesis

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⇒ **DISTRIBUTIVE** reading derived directly; **NON-DISTRIBUTIVE** reading requires additional operators.

Plural-based hypothesis

Conjunctive coordinators lexically form pluralities (‘group’/‘sum’ individuals)
⇒ **NON-DISTRIBUTIVE** readings derived directly; **DISTRIBUTIVE** reading is either due to predicate or requires additional operators.
Q: Distributive vs. non-distributive conjunction

English data won’t help us decide between the distributive-quantifier and the plural-based hypothesis.
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How can cross-linguistic data help?
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**How can cross-linguistic data help?**

If one reading universally requires additional operators, it corresponds to ‘bigger’ LF structures cross-linguistically.
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Assumption: Morphosyntactic containment reflects LF ‘complexity’
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If one reading corresponds to a more complex LF that ‘contains’ the LF for the other reading, this containment relation should be morphosyntactically transparent in at least some languages.
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A previous detailed application: Bobaljik (2012)

Superlative forms may contain the comparative form, but not vice versa.

⇒ Underlying syntax + LF for superlatives ‘more complex’ than for comparatives.
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Testing for ‘containment’: More specific research questions

• Are there conjunctions that permit both readings, but become purely distributive once a certain marker is added within the coordination?
• Are there conjunctions that permit both readings, but become purely non-distributive once a certain marker is added within the coordination?
• Are there conjunctions that are purely distributive, but can get a non-distributive reading once a certain marker is added within the coordination?
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- evidence against ‘no variation’ null hypothesis (no unified containment pattern)
- if the null hypothesis holds up: a way of deciding between the plural-based and the distributive-quantifier hypothesis (which reading is formally ‘less marked’)?

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Underlying assumption: Morphosyntactic containment reflects LF ‘complexity’.
Research questions: Example

Why we decided to use TerraLing – advantages and pitfalls

Structure of our questions and definitions

Some generalizations from our data set
Problems with existing databases/typological surveys

• Such works often do not control for the type of syntactic structure we are after (e.g., symmetric coordinate structures vs. comitatives)
• Such works do not control for the semantic type of the expression (e.g., WALS considers VP and NP conjunction, which might be of the same type; we would require the distinction between type $e$ and type $\langle e, t \rangle$ or $\langle \langle e, t \rangle, t \rangle$)
• If a certain type of example is missing from a grammar, we cannot conclude that it is ungrammatical.
• Some of these works have (vague) semantic descriptions (e.g. Haspelmath (2004)), but often lack semantically relevant minimal pairs with explicit scenarios
• Ideally, we want examples that make the two readings logically independent
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None of the existing databases (e.g., WALS) or existing works based on grammars (e.g. Drellishak (2004), Payne (1985)) provide the data we needed.

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How we proceeded

• We didn't only have to target our semantic questions, but also delimit the classes of expressions we were interested in ⇒ syntactic coordination (vs. comitatives), coordination of proper names, . . .

• We defined frequently used terms in an external glossary (e.g. 'basic conjunctive interpretation'). Much work, as we were the first semantic project on TerraLing.

• We defined the queries by drawing on properties of contexts, examples etc. that are known from work on English or German.

Example: Contrast with third predicate improves CUMULATIVE VP conjunction (5)

The ten children were dancing and smoking, but none of them were singing.

• We provided concrete examples in property definitions (often English, also other languages + fictional languages based on English).

Consultants could change predicates etc. if their language lacked lexical counterparts.

• Survey draws on consultants' linguistic expertise (e.g. identifying collective predicates, measure phrases etc. in their language).
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What we should have done differently

Pre-study

• Problem: Workload and complexity of the queries. A small pre-study would have helped identify less relevant factors.

• Example: We tested proper-name conjunctions with two classes of predicates:

  • predicates with measure phrases (100 euros, 2 meters)
  • predicates with numeral-modified plural DPs (5 bananas)

These behave slightly differently in some languages, but no systematic pattern.

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Two-level structure (languages vs. forms/expressions) was not available yet, would have reduced the number of queries significantly:

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2. Why we decided to use TerraLing – advantages and pitfalls

3. Structure of our questions and definitions

4. Some generalizations from our data set
Glossary entries

Why was this necessary? Examples:

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- Island status (Coordinate Structure Constraint), if it can be tested with e.g. question movement or relativization

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Coordination

Nina Haslinger edited this page on 9 Jul 2017 • 20 revisions

The terms coordination and coordinate structure refer to constructions in which two or more expressions of the same syntactic category or the same grammatical function, which we call coordinates, are combined to form a larger expression. The syntactic category or grammatical function of the larger expression matches that of the coordinates. Coordinate structures may be marked with one or more overt coordinators, but this is not required.

Four syntactic and semantic criteria for coordination are given below. For our purposes, a given construction counts as coordination if it satisfies as many of these criteria as can be tested in the language. It may be that one or more of the criteria cannot be tested. For instance, this is the case if there are no independently motivated tests that tell us whether the putative coordinate structure forms a constituent. Similarly, Coordinate Structure Constraint (CSC) effects cannot be tested if the language lacks the relevant kind of syntactic displacement. In such cases, we assume that criteria that cannot be tested do not provide any evidence for or against the presence of coordination.

With the exception of semantic symmetry, our criteria do not constrain the meaning of coordinate structures.

1 Criteria for coordination

1.1 Constituent status

All coordinates can form a constituent (see [Constituency Tests]) that includes the coordinator(s) (if any coordinators are present) but excludes any other material.
Iterative coordination

Iterative coordination refers to constructions satisfying the following two conditions:

1. They are coordinate structures (see coordination for a list of criteria).
2. There is no fixed upper bound on the number of coordinates. In particular, there may be more than two coordinates.

Note that the second criterion excludes several constructions that are usually discussed in the typological literature on coordination, such as some instances of adversative conjunction (cf. Haspelmath 2007).

In many languages, coordinate structures with more than two coordinates differ from those with exactly two coordinates in that it is not necessary to repeat the coordinator for each additional conjunct. This is illustrated in (1-a) and (2). In such cases, all the possibilities available for more than two conjuncts count as iterative coordination strategies, regardless of whether they are rare or formally marked. For instance, we assume that both of the examples in (1) count as iterative coordination. Even if the counterpart of (1-b) were ungrammatical, (1-a) would provide sufficient evidence that and-coordination is iterative.

(1)
a. Peter, John, Jane and Mary met.
b. Peter and John and Jane and Mary met.

(2) | Amharic       |
---|---------------|
čäw-anna | bärbaṛre      |
salt-COORD | pepper        | butter | I.brought |

‘I brought salt, pepper and butter’ (Haspelmath 2007:13)
Properties for coordinations of proper names

• Is there iterative coordination of proper names at all?

• Is there iterative coordination of proper names with a conjunctive (vs. e.g. disjunctive) interpretation?

⇒ glossary: basic conjunctive interpretation

• Are there conjunctive, iterative coordination strategies for proper names with a CUMULATIVE / COLLECTIVE / DISTRIBUTIVE interpretation?

• CUMULATIVE / DISTRIBUTIVE tested with measure phrases and numeral-modified plurals (with modifiers like exactly, if available in the language)

• COLLECTIVE tested with collective predicates (which consultants had to identify for their language)

• Are there sentences that are ambiguous between a CUMULATIVE and a DISTRIBUTIVE interpretation?

• Are there forms of coordination where one interpretation requires a special marker within the predicate?

cf. English each/between them: Disambiguate plural sentence, but not required to get a particular reading

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# Properties for coordinations of proper names

## Listing Properties

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<thead>
<tr>
<th>Name</th>
<th>Completeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>01: Coordination of Proper Names</td>
<td>74%</td>
</tr>
<tr>
<td>02: Iterative Coordination of Proper Names</td>
<td>63%</td>
</tr>
<tr>
<td>0A01: Measure phrases</td>
<td>57%</td>
</tr>
<tr>
<td>0A02: Iterative Coordination of Proper Names: Non-Distributive Interpretation, Measure Phrases</td>
<td>55%</td>
</tr>
<tr>
<td>0A03: Iterative Coordination of Proper Names: Distributive Interpretation, Measure Phrases</td>
<td>57%</td>
</tr>
<tr>
<td>0A04: Iterative Coordination of Proper Names: Cumulative Interpretation, Measure Phrases</td>
<td>51%</td>
</tr>
<tr>
<td>0A05: Iterative Coordination of Proper Names: Same Strategy for Distributive and Non-Distributive Interpretation, Measure Phrases</td>
<td>53%</td>
</tr>
<tr>
<td>0A06: Iterative Coordination of Proper Names: External Marker Needed for Distributive Interpretation, Measure Phrases</td>
<td>46%</td>
</tr>
<tr>
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<td>46%</td>
</tr>
</tbody>
</table>
Properties for coordinations of proper names: Example

Property: 0A12: Iterative Coordination of Proper Names: Internal Marker Removes Non-Distributive Interpretation, Measure Phrases

Quick Analysis

Add properties to compare with 0A12: Iterative Coordination of Proper Names: Internal Marker Removes Non-Distributive Interpretation, Measure Phrases values

Looking for a specific property?

Selected lings (Remove all)

- Cross Properties
- Implication Antecedent
- Implication Consequent

Overview | Description | Sureness Map | View on Map

A language has the value NA if the language is no for 0A12: Iterative Coordination of Proper Names, i.e. if the language lacks a form of iterative coordination that can be used to combine non-collective proper names such as John and Mary.

A language also has the value NA if, even though the language has iterative coordination of proper names, the relevant example types cannot be constructed in the language, e.g. if it is no for 0A01: Measure Phrases.

A language also has the value NA if it is no for 0A02: Iterative Coordination of Proper Names: Non-Distributive Interpretation, Measure Phrases. This means it has no form of iterative coordination of proper names with a basic conjunctive interpretation that allows for a non-distributive interpretation.

Explanation of the property

The property has the value yes if the language has a form of iterative coordination of proper names with the following characteristics: it can have a non-distributive interpretation in sentences like (1) and a marker can be added inside the coordinate structure that removes this non-distributive reading. In other words, there can be non-distributive interpretation without the marker, but once the marker is added, this interpretation is not available anymore.
Properties for coordinations of proper names: Example

This property concerns the interpretation of sentences like (1), in which a coordination of proper names occurs in **subject position** and the predicate contains a **measure phrase** (in non-subject position).

(1) John, Mary and Sue earned exactly 100 euros.

The English sentence in (1) has two interpretations. It has a **distributional interpretation w.r.t. the measure phrase** that makes it true in a scenario like (2-a). Here each conjunct individually satisfies the predicate, but all the conjuncts together/between them do **not** satisfy the predicate.

It also has a **non-distributive interpretation w.r.t. the measure phrase** that makes it true in a scenario like (2-b), where all conjuncts together/between them satisfy the predicate, but the conjuncts do **not** satisfy the predicate individually.

(2) a. SCENARIO: John earned exactly 100 euros, Mary earned exactly 100 euros, Sue earned exactly 100 euros.

b. SCENARIO: John earned exactly 30 euros, Mary earned exactly 30 euros, Sue earned exactly 40 euros.

What we are interested in is whether your language has additional markers that can occur **within the coordinate structure** and that remove the non-distributive interpretation w.r.t. the measure phrase.

This means you will first have to check whether your language has a **form of iterative coordination** of proper names. Then you will have to check whether this form allows for a non-distributive interpretation w.r.t. the measure phrase in examples like (1). This means that a sentence like (1) in your language would be true in the scenario in (2-b). Note that your sentence can contain a non-distributivity marker on the predicate, as in the fictional example (3-b) below. Whether the distributive interpretation is also present is irrelevant.

You will then have to check whether there is some additional marker that can occur
## Properties for coordinations of proper names: Example

<table>
<thead>
<tr>
<th>Language</th>
<th>Conjunction and Disjunction</th>
<th>Search</th>
<th>Languages</th>
<th>Properties</th>
<th>Contributors</th>
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</thead>
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<td></td>
<td></td>
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<td>No</td>
<td>Hilde Koopman</td>
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<td>Cantonese (Guangzhou)</td>
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<tr>
<td>Korean</td>
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<td></td>
<td>Sochwan Jung</td>
</tr>
<tr>
<td>Chickasaw</td>
<td>Na</td>
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<td>Enrico Flor</td>
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<td>Mary Amaechi</td>
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<td>Paul Roger Bassong</td>
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<td>Alain Hien</td>
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<td>Eva Rosina</td>
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<td>Mart Julien</td>
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• We tested (non-)distributivity marking within the conjunction and within the predicate separately.

• We wanted to distinguish between COLLECTIVE and CUMULATIVE predicates, unlike much of the existing semantic literature. ⇒ Turned out to be relevant!

• We wanted to control for potentially distinct behavior of measure phrases and ordinary plural DPs/NPs. ⇒ In hindsight, this wasn't worth the extra effort/workload for our consultants.

• All questions involved existential statements about 'forms' or 'strategies' for coordination. ⇒ As expected, many languages had two or more strategies.

With the new two-level structure (languages vs. forms/expressions), this would have been much easier to control for.
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3 Structure of our questions and definitions

4 Some generalizations from our data set
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Generalization (from our data set on individual conjunction, simplified)

For any pair of conjunction strategies for proper names, where one strategy can be obtained from the other by adding extra markers within the coordinate structure:

• extra markers within coordinate structure never add cumulative reading
  If the form with extra markers in permits a cumulative reading w.r.t. a certain predicate (of the afore-mentioned kind), so does the form without these markers

• extra markers within coordinate structure never remove distributive reading
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Consequences (simplified)
Also linked to GEN 2: There are conjunction strategies where distributive reading requires markers in VP-predicate, none where cumulative reading requires such markers.

• Unified containment pattern:
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References II


