A General Theory of Multi-Valuation
Project Summary

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1   State of the Art and Preliminary Work

The central questions of this project relate to the nature and resolution of contexts of multi-valuation, where an element (Probe, in Minimalist terms) receives multiple values of a feature under agreement (from the Goal), and what the consequences of these are for theories of the grammar. Given that instances of multi-valuation break from the usual pattern of agreement, they have the potential to inform us about the mechanism of agreement in a unique and novel way. The overarching goal of the project is to explain how languages resolve the situation of having multiple values for some feature, encompassing instances where the values of the features match and when a single item receives conflicting values. We will tackle this issue by systematically investigating how multi-valuation is resolved across different targets and in different syntactic environments.

Multi-valuation has been observed in a variety of constructions and languages. However, the accounts proposed are construction and language specific. No prior research has been done to compare multi-valuation across different targets and languages. This project will be, to our knowledge, the first of its type to make such a systematic comparison of the phenomenon. Moreover, the acceptabil-

ity judgements of these constructions are under debate. To our knowledge, no systematic experiments have been run to reach a solid empirical ground. Our project will make use of experimental methodologies to finely investigate intra- and inter-speaker variation with respect to how agreement is resolved in multi-valuation contexts.

1.0.1 Multi-Valuation Across Targets

Multi-valuation refers to cases where one element stands in agreement with two (or more) elements with values, schematised in (1). Multi-valuation has been primarily observed in right node raising (RNR) or similar constructions (see Hartmann 2000 and Citko 2017 for an overview on RNR). A collection of constructions showing multi-valuation are given in (2). It has been observed on T heads (2a), nouns (2b), and attributive elements (2c). The multi-valued elements are bold and the elements providing the values are underlined.

(1)   <u>Goal$_1$ [value$_1$]</u>   <u>Goal$_2$ [value$_2$]</u>   **Probe[___]**

(2)   a.   John's proud that <u>Bill</u> and Mary's happy that <u>Sue</u> **have/has** been to China.
         b.   <u>This</u> and <u>that</u> **student** are a couple.
         c.   **This** <u>man</u> and <u>woman</u> are a couple.

A. Multi-Valued Ts: Postal (1998), Yatabe (2003) and Grosz (2015) observe that in TP RNR as in (3), the verb *have* agrees with both singular subjects *Bill* and *John*, but shows plural agreement (singular is also possible, *cf.* (2a)). This pattern is seen in English, Western Armenian, Standard Gujarati, Hebrew, Italian and Czech. On the other hand, Serbo-Croatian, Dutch and Greek categorically ban plural agreement in these cases, allowing only singular agreement. Northern dialects of German seem to pattern with Dutch in disallowing plural agreement (as opposed to Southern dialects). Speakers of Austrian German tend to prefer plural over singular agreement. Grosz (2015) accounts for the plural agreement by assuming that the T is structurally shared via multi-dominance and gets one singular value from each singular subject. The T head with two singular values is spelled out as plural in English.

(3)   Sue's proud that <u>Bill</u> and Mary's glad that <u>John</u> **have** travelled to Cameroon.

Gluckman (2015) observes that in Nocte (Sino-Tibetan) regular clauses the verb agrees with both the subject and the object and the two agreements are realised as one (portmanteau) morpheme on the verb. Interestingly, when the subject is 1st person singular and the object is 2nd person singular, the verb shows 1st person *plural* agreement. (4) shows that *-e* is the 1st person plural marker. (5) shows that the 1st person plural marker is found on the verb in a sentence with no 1st plural argument but two singular arguments, thus a verb bearing two [singular] features in Nocte is spelled out as plural, analogous to (3). Gluckman further notes the pattern in Karuk (Hokan), Yimas (Papuan), Wayampi (Tupí-Guaraní), Mapudungun (isolate), Bolinao (Austronesian), Tongva (Uto-Aztecan), Anindilyakwa (Australian) and Colloquial Ainu (Ishikari dialect).

(4) n̲i̲ rang- ka **-e**   (5) n̲g̲a̲ -ma n̲a̲n̲g̲ hetho **-e**
     1PL ASP- go **-1PL**   1SG -NOM 2SG teach **-1PL**
     'We go'   'I shall teach you'

B. Multi-Valued Ns: Harizanov & Gribanova (2014, 2015), Belyaev et al. (2015) observe that in Bulgarian and Russian, two conjoined singular adjectives can modify one plural noun as is shown in (6).

(6)   b̲ă̲l̲g̲a̲r̲s̲k̲-̲i̲j̲-̲a̲   i   r̲u̲s̲k̲-̲i̲   **narod-i**   (Bulgarian)
       bulgarian-SG.M-DEF and russian-SG.M **nation-PL**
       'The Bulgarian and Russian nations' (two nations)

Shen (2016) observes that in a group of languages, two conjoined singular modifiers can only modify a singular noun, unlike (6). For example, English sentences like (7) only allow singular nouns but not plural ones. This pattern is found in English, German, Dutch, Icelandic, Serbo-Croatian, Polish, Slovenian, Greek, Brazilian Portuguese, Spanish and Italian. Shen (2016) argues for a multi-dominance analysis where the NUM heads in each of the conjuncts value the shared noun. When the noun is valued by multiple singular features, it is spelled out as singular. See Shen (2017, to appear) for arguments against other analyses such as ellipsis and across-the-board movement.

(7)   T̲h̲i̲s̲ tall and t̲h̲a̲t̲ short **student(*s)** are a couple.

Belyaev et al. (2015) further observe that in Italian a noun modified by two singular pre-nominal adjectives must be singular, as is shown in (8), whilst a noun modified by two singular post-nominal adjectives must be plural, as is shown in (9).

(8) la   v̲e̲c̲c̲h̲i̲a̲ e n̲u̲o̲v̲a̲ **squadra** (9) le   **bandiere** r̲o̲s̲s̲a̲ e b̲i̲a̲n̲c̲a̲
     the.SG old.SG and new.SG **team.SG**   the.PL **flag.PL**   red.SG and white.SG
     'The old and the new clubs' (2 teams)   'The red and white flags' (2 flags)

C. Multi-Valued Attributive Elements

The effects of multi-valuation are also seen on DP-internal elements including demonstratives, adjectives and possessive pronouns. Following Corbett (1979), we will refer to this class of elements as *Attributive Elements* (A).[1] Corbett (1979) observes that in English a demonstrative valued by two values of singular is spelled out as singular.

(10)   **This/*These** <u>man</u> and <u>woman</u> are a couple.

Looking cross-linguistically, Russian allows plural marking on the multi-valued A element but not singular. King & Dalrymple (2004), Heycock & Zamparelli (2005) find that the equivalents of both sentences in (10) are ungrammatical in Italian, Spanish, French and German. English, Dutch, Finnish and Hindi-Urdu on the other hand allow only singular agreement marking on the multi-valued A element but not plural. Villavicencio et al. (2005) observe that in Brazilian Portuguese the post- and pre-nominal modifiers of two singular nouns can be either singular or plural.

1.0.2   Cross-linguistic Alignment among Agreement Targets and the Agreement Hierarchy

As shown above, agreement patterns in multi-valuation cases vary across agreement targets (As, Ns, Ts) as well as across languages. Our survey of the literature and more languages reveals that the variation is not random: based on a survey of 20 languages we have found three possible multi-valuation alignment patterns, as is shown in Table 1. Each pattern is represented by one language, but all other languages that we surveyed fall into one of these types. The languages we surveyed include English, German, Dutch, Icelandic, Greek, Italian, Spanish, French, Brazilian Portuguese, Romanian, Polish, Serbo-Croatian, Slovak, Slovenian, Bulgarian, Russian, Hebrew, Hindi, Finnish and Hungarian. For now we group multi-valued As and Ns together given that there is no language where multi-valued Ns and As show different agreement patterns. Languages can either resolve singular features the same way on A/N and T (Slovenian and Russian), or T can resolve to plural whilst A/N show singular (a possibility for English). The generalisation arises that, if A/N resolves two singular features to

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[1]Note that in the literature, attributive elements, e.g. demonstratives and adjectives, are often assumed to occupy different syntactic positions.

plural, then so does T. Unattested is the pattern in the fourth line of Table 1. We will refer to this absence as a "3/4 effect".

Representative Language	Multi-valued As & Ns	Multi-valued T
Slovenian	singular	singular
Russian	plural	plural
English	singular	plural
unattested	plural	singular

Table 1: Patterns: Cross-linguistic Multi-valuation

A distinction between semantic and morphological agreement (*cf.* Corbett 1979, Wechsler & Zlatić 2003, Smith 2015) becomes important for multi-valuation when we consider that resolution of two singular features to plural agreement reflects seems to be a type of *semantic agreement*. Singular on the other hand reflects only morphological information received by the multi-valued element, and as such is a form of *morphological agreement*. The difference between the two types of agreement can be seen in nouns like *commitee* in certain dialects of English, which are able to control either singular or plural agreement (Corbett 1979, Smith to appear). Singular agreement reflects the morphological shape of the item (as on *this* in (11)), whilst plural ostensibly reflects the internal plurality (as on *have* in (11)).

(11)   *This* committee *have* gathered.

Here a striking parallel arises to work on the Agreement Hierarchy. The Agreement Hierarchy is a scale proposed by Corbett (1979, 1983, *et seq.*) that describes how likely a particular element in a language is to show semantic agreement, as opposed to morphological agreement. Corbett proposes the scale in (12), and shows that in languages that allow for semantic agreement, elements to the right on the scale are more likely to bear semantic agreement than elements to their left (and conversely for morphological agreement).

(12)   attributive − predicate − relative pronoun − personal pronoun
              ← morphological agreement   semantic agreement →

A number of different generalisations about the Agreement Hierarchy have emerged in recent work (see for instance Wechsler & Zlatić 2003, Pesetsky 2013, Landau 2016, Smith 2015, 2017), however relevant for us is Corbett's original observation that the scale in (12) is *monotonic*: that is, for some language, if an element on the scale is able to show semantic agreement, *all elements to the right of it will*

also be able show semantic agreement. This gives rise to the same kind of 3/4 effect as seen in table 1. For any two points in (12), it will be the case that they can both show morphological agreement, both show semantic agreement, or it can be the case that the leftmost element shows morphological agreement whilst the rightmost element semantic. The fourth possibility, with the rightmost element showing morphological agreement, and the leftmost semantic, is ruled out by the monotonic nature of (12).

1.0.3   Feature Clashes and Repair Strategies in Multi-Valuation

Up to now, we have been considering how languages resolve matching feature values on a single element. There is also variation where the multiple values that are assigned to an element do not match. At least the following four strategies have been attested:

A. **Resolved agreement**: The target that is valued by a singular and a plural target is spelled out as plural. Shen (2017) reports that in English the T head that agrees with a plural and a singular subject shows resolved plural agreement, shown in (13).

   (13)   John is glad that <u>the twins</u> and Bill is proud that <u>Sue</u> **have** been to Cameroon.

B. **Closest agreement**: The target shows the same value as the linearly closest goal. This is noted for some speakers by Pullum & Zwicky (1986) for shared objects in RNR, but not discussed in great detail (see also Shen 2016 for nominal RNR).

   (14)   … weil   <u>ich</u> Bier und <u>du</u> Milch {***trinke**/$^{\%}$**trinkst**}.
            because I   beer and you milk drink.1.SG/drink2.SG
            'because I drink beer and you milk.'   [German]

C. **Grammaticality through syncretism**: Mismatching values are only allowed as long as the morphological form of the multi-valued target is compatible with both values (Zaenen & Karttunen 1984, Schütze 2003, Citko 2005, Dalrymple et al. 2009, Asarina 2010, Bhatt & Walkow 2013, Bjorkman 2016). Corbett (1979) notes that the multi-valued As in (15a) are not compatible with two nouns that differ in number values. However, if the multi-valued target has a morphological form that is compatible with both plural and singular, e.g. the number neutral definite determiner *the* in English, the sentence is gram-

matical (15b). King & Dalrymple (2004) support this with further number neutral elements like Georgian determiner *es* and Armenian demonstrative *ais*/*aid*.

(15)   a.   ***this** boy and girls/***these** boys and girl
        b.   **the** boys and girl/**the** boy and girls

D. **Ineffablility**: Mismatches are strictly ruled out, i.e. the repair strategies mentioned above are not available. When neither the resolved agreement nor closest conjunct agreement is available, and there is no morphological form that is compatible with the mismatching number values, the construction is ruled out. This is already shown in (15a) in English. Another example can be found in Bulgarian nominal RNR constructions. As is observed by Harizanov & Gribanova (2015), when two singular DPs share one noun in Bulgarian, the noun shows plural agreement, however, when one singular DP and one plural DP share one noun, the construction is unacceptable, regardless of the marking on the noun as in (16). The same effect is observed for Russian multi-valued demonstratives by King & Dalrymple (2004).

(16)   *părv-a   i   posledn-i **stranic-a/stranic-i**
        first-SG.F and last-PL   page-SG.F/page-PL.F
        'The first pages and the last pages'   [Bulgarian]

1.0.4   The Structure of Conjunction and Disjunction

We discuss coordination as a separate category here, as the multi-valuation relation is slightly different. In the above cases, multi-valuation involves a direct relation between the agreement target and the agreement controllers. However, in coordination constuctions, there appears to be multi-valuation on the head of the coordination. Much work on the syntax of conjunction has coalesced around the idea that conjunction involves two (or more) DPs conjoined by a coordinating head, where the first DP asymmetrically c-commands the second (Munn 1993 and many subsequent others).

Coordination shows the signatures of multi-valuation in the following ways. It is clear that in many cases, coordinations, in particular conjunctions, have phi-features that are computed from the conjoined arguments. It is extremely common across languages that a conjunction of two singulars shows plural agreement. In certain languages, conjunctions sometimes fail to show resolved agree-

ment and we observe agreement with one of the conjoined arguments, either the structurally *highest* conjunct or the linearly *closest* conjunct (*cf.* (14)). This has been shown for various unrelated languages (Johannessen 1998) *e.g.* English (Sobin 1997, Smith to appear), Slovenian (Marušič et al. 2015), Serbo-Croatian (Bošković 2009), Hindi (Benmamoun et al. 2009) and Tsez (Benmamoun et al. 2009). Studies have argued that closest conjunct agreement arises when mismatching values in each conjunct cannot be computed. Syncretisms have also been shown to aid grammaticality (Bhatt & Walkow 2013) *cf.* (15).

However, with coordination constructions, an asymmetry arises between conjunction and disjunction with respect to agreement. Though agreement with conjunctions overwhelmingly shows the resolution of the conjuncts, agreement with disjunctions overwhelmingly does not, and generally the value of the closest disjunct is the agreement controller (the following examples are modified slightly from Marušič et al. 2015).

(17)   a.   Neither that dog nor those cats are housetrained.
       b.   Neither those cats nor that dog is housetrained.

This asymmetry in agreement is repeated in many diverse languages: English, German (though see (18)), Dutch (Koeneman 2010), Iraqw (Mous 2004), Vatsi (Stilo 2004), Lavukaleve (Terrill 2004), and is one of various typological asymmetries noted between conjunction and disjunction, see Haspelmath (2004) and Ohori (2004). The reason for the asymmetry between conjunction and disjunction is poorly understood. Note that the asymmetry is not categorical; as the following examples demonstrate, resolved agreement does arise sporadically (cf. Kazana 2011).

(18)   Ich oder du   **sind** gekommen.
       I   or   you are   arrived
       'I or you arrived.'   [German]

(19)   [...] ya <u>pulaw</u>,   ya <u>ˤärˤä</u>   ħe-**d**-arg-i-ra
              or pilaf(ABS) or hen(ABS) NEG-**PL**-find-AOR-1
       'Neither the pilaf nor the chicken was there.'   [Dargi, (van den Berg 2006)]

2   Objectives and Work Programme

2.1   Anticipated Total Duration of the Project

The project will last for three years.

2.2   Objectives

Previous literature has discovered rich empirical patterns regarding multi-valuation phenomena across targets, constructions, and languages. When valued by two singular goals, the Ts, Ns, and As can show singular/morphological agreement in some languages and plural/semantic agreement in other languages. However, each account proposed for multi-valuation cases can only cover a subset of the full picture. Little attention has been paid to the commonality and differences across targets that are multi-valued. As a consequence, a unified theory of multi-valuation has not been proposed. The overarching goal of this project is to complete a thorough investigation into the nature of multi-valuation and develop a general theory, which will be to our knowledge the first of its kind to systematically look at the phenomena across different targets, constructions and feature types. We will approach this question from three directions: (i) multi-valuation of matching feature values; (ii) multi-valuation of conflicting feature values; and (iii) the agreement asymmetry in coordination.

Work Package (WP) 1: The Resolution of Matching Feature Values

Despite the empirical discoveries in the literature, almost all the accounts proposed are language or construction specific. Left unanswered has been what is responsible for the variation seen across languages and across constructions, such as the difference between Russian, English and Slovenian in Table 1. The parallel we have drawn to the Agreement Hierarchy suggests that this is not random, and stems from deeper principles of language.

WP2: The Resolution of Conflicting Feature Values

Apart from targets valued by matching features, a general theory of multi-valuation needs to account for targets valued by mismatching features in multi-valuation. Although a collection of repair strategies have been observed in multi-valuation, they are often mentioned without explanation. The question still remains why

different multi-valued targets use different repair strategies and why the same targets in different languages use different repair strategies. Feature clashes in multi-valuation also shed light on theories of repair strategies in general. We aim to test theories of repair strategies like resolved agreement, closest conjunct agreement and syncretism against instances of feature mismatches in multi-valuation.

WP3: The Syntactic Base of Coordinations

There is various evidence to suggest that conjunction and disjunction should receive a uniform syntactic treatment, yet there are clear differences between the two with respect to agreement. We aim to look at this asymmetry from the perspective of multi-valuation. Specifically, since the evidence suggests that both conjunction and disjunction involve multi-valuation, why do conjoined subjects so often show resolved agreement, whilst disjoined subjects do not? Put another way, if they share a common syntax, why are their agreement properties different?

2.3   Work Programme incl. Proposed Methods

2.3.1   Traditional Methods

We propose to approach these research questions by making use of a variety of methodologies. The project will overall be divided into three work packages, that will address the above objectives. Each work package will consist of a typological component, where the data will be collected using traditional methods of literature searches and consultation of native speakers to assess their judgements on the relevant contexts. Using the latter methodology, we are, as always, restricted to the speakers that we have contact with. However, the Department of Linguistics at the Goethe-Universität, Frankfurt offers a unique environment for this, due to the large number of students who are speakers of languages from West Africa, which have not to our knowledge been investigated widely for this phenomenon. Additionally, we will make use of our existing contacts, which will allow us to investigate multi-valuation in languages such as Telugu, Nepali, Armenian, Arabic, Estonian, Lithuanian and Turkish, amongst others. Working with native speakers will constitute the bulk of the traditional data collection for work packages 1 and 2, but we will also make use of it in WP3.

For WP3, we will also conduct a rigorous survey of the properties of coordina-

tions in a typologically balanced sample. This will involve noting the properties of coordinations from reference grammars of different languages. Our sample of languages will be genetically and areally balanced, and we will use the WALS 100 language sample to form the basis of the language selection here, making appropriate modifications where necessary.

2.3.2   Experimental Methods

In addition to more traditional methods, we also aim to make use of experimental methodologies that have recently been applied to phenomena of the same ilk as ours, for instance in work by the Experimental Morphosyntax of the South Slavic Languages Group, and expressed in, for instance, Marušič et al. (2015) and papers in Franks et al. (2016). Whilst overall accurate, introspective judgements reported by native speakers can mask underlying commonalities across superficially contrasting languages. Featherston (2005) for instance shows that whilst German has been claimed in various places to not show superiority effects in syntax, such effects are detectable experimentally. Using experimental methods allows us to probe more deeply into the underlying syntactic structures of a language, and see whether the syntax of languages that appear superficially different in one regard, are actually more alike than they seem.

Since the acceptability judgements of some multi-valuation data are subject to interspeaker variation and processing limits (see Grosz 2015 and Yatabe 2003 for discussion), we also plan to use a combination of experimental methods to probe native speakers' judgements. We will use both the 7 point Likert scale as well as the forced choice task in our experimentation. The Likert scale is a common methodology to probe acceptability judgements, however, the forced choice task has been shown to be more sensitive (Sprouse et al. 2013). By using the forced choice task, we are able to detect subtle differences. At the same time, the Likert scale judgements will provide the information regarding the size of the effect. The combination of the two would provide a clearer empirical picture than what previous literature is based on.

2.3.3   Work Programme

WP1: The Resolution of Matching Feature Values   Our primary aim in this WP is to test how closely patterns of multi-valuation mirror known patterns of

the Agreement Hierarchy. To this end, we will aim to build on the existing typology that has been established in previous literature and our prior work (see table 1 above). In addition to collected data regarding what languages do with multi-valued Ts as compared to multi-valued As and Ns, we will also explore in further depth the syntactic effects on multi-valuation, such as whether there is a difference in the resolution possibilities according to whether the multi-valued element precedes or follows the agreement controllers in Italian. At the beginning of the project, we will develop a standard set of contexts that we will use to guide our meetings with consultants to ensure that our data collection is systematic to control for context as far as possible per language.

This investigation will be supplemented with experiments in both German and Slovenian. Our aim is to find out whether we can detect differences between agreement resolution on Ts compared to As and Ns. The following considerations motivated our choice of these two languages for the issues under discussion in this WP. German allows either singular or plural agreement on T, with variation between speakers reported in the literature. Since German is a 'mixed' language, with both resolved and non-resolved agreement in multi-valuation, we will be able to manipulate various variables and see what factors influence whether agreement is resolved or not. German is very practical to test, as we have easy access to speakers at our university.

We will also use the same experimental set up to test Slovenian. Our preliminary work with native speakers suggests that Slovenian is not a mixed language with resolved agreement not seen on either multi-valued Ns, As or Ts. Slovenian thus offers a useful contrast, compared to German. Our prediction is that even in a language like Slovenian where resolution of multi-valued elements to plural is not normally observed, speakers will judge resolved agreement on T better as compared to resolved agreement on As and Ns. If this prediction is confirmed, it would be consonant with other work related to the Agreement Hierarchy, for instance Levin (2001), who shows that for Standard American English (SAE), though speakers will not generally judge plural agreement with a collective noun as acceptable, the underlying pattern of SAE is the same as in other English dialects. The experiments on Slovenian will be run at the University of Nova Gorica, in cooperation with Prof. Franc Marušič.

WP2: The Resolution of Conflicting Feature Values   WP2 will focus on the resolution of mismatching features, and how a language can resolve the situation

whereby an element is seemingly required to spell-out conflicting feature values. As with the matching cases, we will conduct cross-linguistic surveys as far as possible to probe the effects of elements containing two conflicting features. We will focus on two major contexts: mismatches in multi-valued As, Ns and Ts, and mismatches between multiple cases assigned to a shared object in RNR contexts. Whilst in the matching feature investigation we are largely restricted to investigating the resolution of number features, as there is a natural semantic resolution, in testing mismatches, we can test more easily the effects of mismatches in gender, person and case, in addition to number. As well as the cross-linguistic survey, mismatching contexts will be experimentally texted in German and Slovenian, in parallel with the experiments run as part of WP1.

Another issue that we will investigate as part of WP2 is resolution of agreement to the linearly closest controller. This strategy of resolution has been noted in passing in the literature (Pullum & Zwicky 1986) as an option for some speakers, but not granted much formal attention. We have informally checked judgements with some speakers, and find that this strategy appears to be robust. Furthermore, agreement resolution to the closest potential controller has been in agreement with conjunctions in certain languages and used to motivate a particular formulation of the mechanism of agreement (Benmamoun et al. 2009, Bhatt & Walkow 2013, Marušič et al. 2015).

We will test sentences in German and Icelandic where the verbs differ in the cases they assign to their direct objects. Specifically, we will construct sentences whereby a single object is shared between two verbs, where the verbs differ according to the case that they assign to their object. Both German and Icelandic are good candidates for this study, since they both have verbs that assign dative case to the direct object. Icelandic allows us to go further as it also has various verbs that assign genitive case to the direct object. Thus, we can construct mismatches whereby a single object is assigned two different cases. These languages also provide good test cases, as they both exhibit the property of V2, and so allow us to manipulate the syntactic position of the verbs relative to the shared object.

WP3: The Syntactic Base of Coordinations   Our major focus in WP3 is the asymmetry seen in agreement between conjunction and disjunction. Specifically, given the hypothesis that they share a common syntactic base, why should conjunction show resolved agreement so regularly and disjunction so rarely, and

what are the factors that increase the likelihood of agreement resolution in this realm? We will approach these questions from two directions. Firstly, in order to understand whether a uniform syntax for both is possible, we will also undertake a large typological survey of the morphosyntactic and syntax-semantic properties of coordination to see in which ways conjunction and disjunction diverge typologically. Coordination is often not a uniform phenomenon: some languages express conjunction by means of comitative case whilst disjunction through separate words. What do those differences tell us about the syntactic structure? Regarding the language sample: we strive to investigate the expression of coordinations cross-linguistically in a genetically and areally balanced way, but it is not practical to do this by working directly with native speakers as so many languages would not be accessible to us. For the typology of the morphosyntax, we propose to collect data from reference grammars of languages, basing our sample on the WALS 100 language sample, with appropriate substitutions where necessary. Such cross-linguistic sampling has been fruitfully employed in recent years in theoretical work (see Baker 2008, Bobaljik 2012, Smith et al. Accepted), and will allow us to collect a large, representative range of data to bear on the similarities and differences between the expression of coordination in natural language. Coordination is frequently described in grammars, and thus the data should be readily available.

Secondly, we hypothesise that resolved agreement is possible in disjunctions, but influenced by semantic considerations. The findings from Greek reported by Kazana (2011) support this hypothesis, showing that resolved agreement is better in environments of inclusive disjunction versus exclusive disjunction. For one experiment, we intend to replicate her findings for German and English, to show that the phenomena is not limited to Greek. Furthermore, we will investigate whether resolved agreement in disjunction shows up with equivalents of *neither … nor*, which though clearly morphologically related to the disjunction *or*, has the semantics of a coordination (*John wants neither a cat nor a dog = John does not want a cat AND John does not want a dog*). We plan to test this hypothesis with two situations that we anticipate to facilitate resolved agreement in disjunctions. Firstly, we will test agreement with disjunction with an inclusive reading in (20a) versus disjunction with an exclusive reading in (20b). Example conditions are given below:

(20)   a.   *Students with legitimate reasons are excused from the exam; however, we must speak with parents to make sure...* A doctor's note or a parent's letter is/are required for excuse of attendance.

      b.   *With only cyclists from Spain or Italy left in the competition...* A Spaniard or an Italian is/are going to win the race.

The second experiment tests agreement with negative disjunction *neither...nor* in (21a) versus *either...or...* in (21b).

(21)   a.   *With only European cyclists left in the competition...* Either a Spaniard or an Italian is/are going to win.

      b.   *With only European cyclists left in the competition...* Neither an American nor a Canadian is/are going to win the race.

For each of these experiments, we will test German and English. The German experiments will be run at Goethe-Universität, Frankfurt, whilst English experiments will be run using Amazon Mechanical Turk. The choice of these languages come from the following considerations. Firstly, both are very easy to test at a practical level, with the PIs being native speakers of these languages, as well as there being easy access to a number of speakers. Secondly, German and English will provide an interesting contrast. In English, the *neither... nor* construction is clearly morphologically related to the disjunction head: *nor*, which appears to be a composition of negation (*n-*) and *or*. The German equivalent, *weder... noch* on the other hand, whilst clearly related to the positive equivalent *entweder... oder*, contains a less obvious morphological relation to the usual disjunctive head *oder*, though the semantic relation is clear.

3   Bibliography

Asarina, Alya (2010) Neutrality vs Ambiguity in Resolution by Syncretism: Experimental Evidence and Consequences. In *Proceedings of NELS 41*, vol. 1, Yelena Fainleib, Nicholas LaCara, & Yangsook Park, eds., Amherst, MA: GLSA, 43–57.

Baker, Mark (2008) *The syntax of agreement and concord.* Cambridge: Cambridge University Press.

Belyaev, Oleg, Mary Dalrymple, & John J. Lowe (2015) Number Mismatches in Coordination: An LFG Analysis. In *Proceedings of the LFG15 Conference*, Miriam Butt & Tracy Holloway King, eds., Stanford, CA: CSLI Publications, 26–46.

Benmamoun, Elabbas, Archna Bhatia, & Maria Polinsky (2009) Closest conjunct agreement in head final languages. *Linguistic Variation Yearbook* **9**: 67–88.

Bhatt, Rajesh & Martin Walkow (2013) Locating agreement in grammar: An argument from conjunctions. *Natural Language and Linguistic Theory* **31**: 951–1013.

Bjorkman, Bronwyn M. (2016) Go get, come see. *Natural Language & Linguistic Theory* **34**(1): 53–91.

Bobaljik, Jonathan D. (2012) *Universals in Comparative Morphology*. Cambridge, MA: MIT Press.

Bošković, Željko (2009) Unifying first and last conjunct agreement. *Natural Language and Linguistic Theory* **27**(3): 455–496.

Citko, Barbara (2005) On the Nature of Merge: External Merge, Internal Merge, and Parallel Merge. *Linguistic Inquiry* **36**(4): 475–496.

Citko, Barbara (2017) Right node raising. In *The Wiley Blackwell Companion to Syntax*, Martin Everaert & Henk van Riemsdijk, eds., John Wiley & Sons, Inc.

Corbett, Greville G. (1979) The Agreement Hierarchy. *Journal of Linguistics* **15**: 203–225.

Dalrymple, Mary, T. H. King, & L. Sadler (2009) Indeterminacy by underspecification. *Journal of Linguistics* **45**: 31–68.

Featherston, Sam (2005) Universals and Grammaticality: wh-constraints in German and English. *Linguistics* **43**(4): 667–711.

Franks, Steven, Boban Arsenijević, Marijana Kresić, Nedžad LEko, Anrew Nevins, & Jana Willer-Gold, eds. (2016) *Journal of Slavic Linguistics: Agreement in Slavic*.

Gluckman, John (2015) Decomposing Morphological Number in Local Contexts. In *Proceedings of WCCFL 33*, Kyeong min Kim, Pocholo Umbal, Trevor Block, Queenie Chan, Tanie Cheng, Kelli Finney, Mara Katz, Sophie Nickel-Thompson, & Lisa Shorten, eds., 146 – 156.

Grosz, Patrick (2015) Movement and Agreement in Right-Node Raising Constructions. *Syntax* **18**(1): 1–38.

Harizanov, Boris & Vera Gribanova (2014) Inward-sensitive contextual allomorphy and its conditioning factors. In *Proceedings of the 43rd Annual Meeting of the North East Linguistic Society*, vol. 1, H.-L. Huang, E. Poole, & A. Rysling, eds., Amherst, MA: GLSA, 155–166.

Harizanov, Boris & Vera Gribanova (2015) How Across-the-Board Movement Interacts with Nominal Concord in Bulgarian. In *Proceedings from the Annual Meeting of the Chicago Linguistic Society (CLS)*, University of Chicago, IL: Chicago Linguistic Society.

Hartmann, Katharina (2000) *Right Node Raising and Gapping: Interface Conditions on Prosodic Deletion*. Amsterdam: John Benjamins.

Haspelmath, Martin (2004) Coordinating constructions: An overview. In *Coordination Constructions*, Martin Haspelmath, ed., Amsterdam and Philadelphia: John Benjamins Publishing Company, 3–39.

Heycock, Caroline & Roberto Zamparelli (2005) Friends and Colleagues: Plurality, Coordination, and the Structure of DP. *Natural Language Semantics* **13**(3): 201–270.

Johannessen, Janne Bondi (1998) *Coordination*. Oxford: Oxford University Press.

Kazana, Despina (2011) *Agreement in Modern Greek coordinate noun phrases.* Ph.D. thesis, University of Essex.

King, Tracy Holloway & Mary Dalrymple (2004) Determiner agreement and noun conjunction. *Journal of Linguistics* **40**(1): 69–104.

Koeneman, Olaf (2010) Is agreement resolution part of core grammar. In *Structure Preserved, Linguistik Aktuell*, vol. 164, Jan-Wouter Zwart & Mark de Vries, eds., Amsterdam/Philadelphia: John Benjamins Publishing Company, 257–265.

Landau, Idan (2016) DP-internal semantic agreement: A configurational analysis. *Natural Language and Linguistic Theory* **34**: 975–1020.

Levin, Magnus (2001) *Agreement with collective nouns in English, Lund Studies in English*, vol. 103. Lund University.

Marušič, Franc, Andrew Nevins, & William Badecker (2015) The grammars of conjunction agreement in Slovenian. *Syntax* **18**(1): 39–77.

Mous, Maarten (2004) The grammar of conjunctive and disjunctive coordination in Iraqw. In *Coordinating constructions: An overview*, Martin Haspelmath, ed., Amsterdam and Philadelphia: John Benjamins Publishing Company, 109–122.

Munn, Alan (1993) *Topics in the syntax and semantics of coordinate structures.* Ph.D. thesis, University of Maryland.

Ohori, Toshio (2004) Coordination in Mentalese. In *Coordination Constructions*, Martin Haspelmath, ed., Amsterdam and Philadelphia: John Benjamins Publishing Company, 41–66.

Pesetsky, David (2013) *Russian Case Morphology and the Syntactic Categories.* Cambridge, MA: MIT Press.

Postal, Paul M. (1998) *Three Investigations of Extraction.* Cambridge: The MIT Press.

Pullum, Geoffrey K. & Arnold M. Zwicky (1986) Phonological resolution of syntactic feature conflict. *Language* **62**: 751–773.

Schütze, Carson (2003) Syncretism and double agreement with Icelandic nominative objects. In *Grammar in focus: Festschrift for Christer Platzack*.

Shen, Zheng (2016) No Clash Constraint in Nominal RNR Number Agreement. In *University of Pennsylvania Working Papers in Linguistics: Proceedings of the*

39th Penn Linguistics Conference, vol. 22, 245–253.

Shen, Zheng (2017) Multi-valued Ns and Ts in number concord and agreement. In *University of Pennsylvania Working Papers in Linguistics: Proceedings of the 40th Penn Linguistics Conference*, vol. 23, 251–260.

Shen, Zheng (to appear) On multi-valued Ns and Ts in number concord and agreement. In *Proceedings of the 52nd Annual Meeting of the Chicago Linguistic Society.*

Smith, Peter W. (2015) *Feature mismatches: Consequences for syntax, morphology and semantics.* Ph.D. thesis, University of Connecticut, Storrs, CT.

Smith, Peter W. (2017) Possible and Impossible Agreement Mismatches, manuscript, Goethe-Universität, Frankfurt.

Smith, Peter W. (to appear) The Syntax of Semantic Agreement in English. *Journal of Linguistics* **https://doi.org/10.1017/S0022226716000360**.

Smith, Peter W., Beata Moskal, Jungmin Kang, Ting Xu, & Jonathan D. Bobaljik (Accepted) Case and number suppletion in pronouns. *Natural Language & Linguistic Theory* .

Sobin, Nicholas (1997) Agreement, default rules, and grammatical viruses. *Linguistic Inquiry* **28**(2): 318–343.

Sprouse, Jon, Carson T. Schutze, & Diogo Almeida (2013) A Comparison of Informal and Formal Acceptability Judgement Using a Random Sample from *Linguistic Inquiry* 2001-2010. *Lingua* : 219–248.

Stilo, Donald (2004) Coordination in three Western Iranian languages: Vafsi, Persian and Gilaki. In *Coordination Constructions*, Martin Haspelmath, ed., Amsterdam and Philadelphia: John Benjamins Publishing Company, 269–330.

Terrill, Angela (2004) Coordination in Lavukaleve. In *Coordination Constructions*, Martin Haspelmath, ed., John Benjamins Publishing Company, 427–443.

van den Berg, Helma (2006) Coordinating constructions in Daghestanian languages. In *Coodination constructions*, Martin Haspelmath, ed., Amsterdam and Philadelphia: John Benjamins Publishing Company, 197–226.

Villavicencio, Aline, Louisa Sadler, & Doug Arnold (2005) An HPSG Account of Closest Conjunct Agreement in NP Coordination in Portuguese. In *Proceedings of the HPSG 2005 Conference.*

Wechsler, Stephen & Larisa Zlatić (2003) *The many faces of agreement.* Stanford.

Yatabe, Shuichi (2003) A Linearization-Based Theory of Summative Agreement in Peripheral-Node Raising Constructions. In *Proceedings of the 9th International Conference on HPSG*, Jong-Bok Kim & Stephen Wechsler, eds., Stanford, CA: CSLI.

Zaenen, A. & Lauri Karttunen (1984) Morphological non-distinctiveness and co-

ordination. In *Proceedings of Eastern States confence on linguistics*, 309–320.