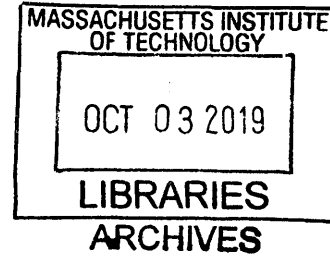# Intervention Effects in German:
A Contiguity Approach

by

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M.A., English Linguistics
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Intervention Effects in German:
A Contiguity Approach

by

VERENA HEHL

Abstract

This paper explores to what extent Richards' Contiguity Theory can insightfully be applied to so-called *Intervention Effects* in German, a set of phenomena which were originally described as constraining the syntax in an interesting way and have mostly been studied in Alternative Semantics terms by S. Beck et al, and H. Kotek. Branan (2018) has offered a Contiguity-theoretic account of Japanese, Korean, and Mongolian intervention facts. I will try to do so for German here. German, as will be discussed, differs crucially from the languages explored by Branan's (2018) crosslinguistic study. Japanese, Korean, and Mongolian, being syntactically right-headed, prosodically left-active languages, first destroy but then reestablish a Contiguous Probe-Goal relationship in the course of the derivation of intervention effect examples. In German, a prosodically left-active but syntactically mixed-headed language, by contrast, Contiguity relationships in multiple *wh*-questions are terminally destroyed in intervention configurations. This, I claim, triggers the familiar unacceptability judgments. I will further show that, contrary to the languages that Branan examines, in German the effect of Grouping cannot be observed in the prosody.

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Acknowledgments

'Such a work will never be finished: it must, however, pass as such, as soon as the author has done her utmost, considering time and circumstances.'

J. W. Goethe, Italian Journey, March 16, 1787, translated by the author.

I understand this paper as a status report, and I hope my readers will see it as that as well. It is dedicated to the people who have enriched my life professionally and personally. To every single one of them goes a heartfelt:

Thank you, Danke, Спасибо, *Hvala, Obrigada,* תודה, and 謝謝.

Contents

'What, Polyphemus, what in the world's the trouble? [...]
Surely no one's rustling your flocks against your will -
surely no one's trying to kill you now by fraud or force!'
'*Nobody*, friends - Polyphemus bellowed back from his
cave - Nobody's killing me now by fraud and not by
force!'

Homer, *The Odyssey* 9.450-55, translated by R. Fagles

1 Introduction

This paper pursues a topic which, to the best of my knowledge, has not been covered in
the literature. It explores to what extent Richards' Contiguity Theory can insightfully be
applied to so-called *Intervention Effects* in German, a set of phenomena which were orig-
inally described as constraining the syntax in an interesting way and have mostly been
studied in Alternative Semantics terms by S. Beck et al, and H. Kotek. Branan (2018) has
offered a Contiguity-theoretic account of Japanese, Korean, and Mongolian intervention
facts. I will try to do so for German here. German, as will be discussed, differs crucially
from the languages explored by Branan's (2018) crosslinguistic study. Japanese, Korean,
and Mongolian, being syntactically right-headed, prosodically left-active languages, first
destroy but then reestablish a Contiguous Probe-Goal relationship in the course of the
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syntactically mixed-headed language, by contrast, Contiguity relationships in multiple
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gers the familiar unacceptability judgments. I will further show that, contrary to the
languages that Branan examines, in German the effect of Grouping cannot be observed
in the prosody.

The key data to be discussed in this paper are given in (1) and (2).[1] In (1a) a (prosodi-
cally) in-situ *wh*-phrase is clearly acceptable under a proper name; in fact, the structural
configuration in (1a) is preferred over an alternative in (1b).[2] In (1d) the *wh*-phrase *wo*
'where' is c-commanded by the negative quantifier *niemand* 'nobody'. Surprisingly, this
sentence is ungrammatical. It appears that the structural relation between the quantifier
and the *wh*-element determines acceptability. In the well-formed (1c) the *wh*-phrase has
moved past the negative quantifier. Note that German has so-called quexistentials, a
term coined by Sabine Iatridou. Quexistentials are *wh*-phrases which can be interpreted
as either interrogatives or indefinites, depending on the environment/ stress pattern.

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[1] I will adopt the notation for judgments as reported in earlier publications, unless otherwise noted. *
means ungrammatical under any context, both # and ?? as used by Beck mean unacceptable or
uninterpretable, independent of context.

[2] David Pesetsky, p.c., suggests that this might be pointing towards an optimality-theoretic principle:
Avoiding intervention effects seems to trump violating Superioty. I will leave the details for further
research.

The judgments for the multiple questions reported here presuppose the reading in which the lower *wh*-phrase is understood as an interrogative phrase. If it is read as an indefinite instead, these sentences are grammatical and interpretable.

(1) Key data 1[3]

    a. *Wen   hat der   Noah wo   ertappt?*
       who-ACC has the-NOM Noah where caught
       'Where did Noah catch whom?'
       'Tell me the person-place pairs (x,y) such that Noah caught x at y.'
                                 (cf. Beck 2006: 4, (7b.))

    b. *??Wen   hat wo   der   Noah ertappt?*
       who-ACC has where the-NOM Noah caught
       intended: 'Where did Noah catch whom?'

    c. *Wen   hat wo   niemand   ertappt?*
       who-ACC has where nobody-NOM caught
       'Where did nobody catch whom?'
       'Tell me the person-place pairs (x,y) such that nobody saw x at y.'
                                   (cf. Beck 2006: 4, (7c.))

    d. *#Wen hat niemand   wo   ertappt?*
       whom has nobody-NOM where caught
       intended: 'Where did nobody catch whom?'   (cf. Beck 2006: 4, (7a.))

The same elements that are problematic for *wh*-intervention also seem to be problematic for NPI intervention, as exemplified in (2). Note that a configuration in which a negative quantifier linearly precedes a focused element is ill-formed in an NPI configuration (cf. (2a)), with movement ameliorating the situation (2b), while outside of an NPI context both orders are acceptable (cf. (2c) and (2d)).

(2) Key data 2

    a. *??..., weil   niemand   nur für Otto einen Finger gerührt hat.*
       ...   because nobody-NOM only for Otto a-ACC finger moved has

       intended: '... because nobody lifted a finger for Otto only.'
                                  (Beck 2006: 39, (103a.))

    b. *..., weil   nur für Otto niemand einen Finger gerührt hat.*
       ... because only for Otto nobody a-ACC finger moved has
       '... because nobody lifted a finger for Otto only.'   (Beck 2006: 39, (103b.))

    c. *..., weil   niemand   nur für Otto gekocht hat.*
       ... because nobody-NOM only for Otto cooked has
       '... because nobody cooked only for Otto.'

---

[3]The paper will make use of the following glosses: ACC accusative, DAT dative, DO direct object, IO indirect object, NOM nominative. M means information-structurally marked.

d. ^M..., *weil   nur für Otto niemand   gekocht hat.*
   ...   because only for Otto nobody-NOM cooked has
   '... because nobody cooked only for Otto.'

2 The Alternative Semantics account of Intervention

The term *intervention effect* (Beck 1996, 2006; Pesetsky 2000; Kotek 2014, 2017, 2019 and many others) is used to describe the observation that a wide range of operators including negation, focus sensitive particles, and certain quantifiers disrupt a relationship between two elements ("intervene" between two elements), which leads to unacceptability and/ or ungrammaticality (cf. (3)).

(3) #/*... X ... **intervener** ... Y ...
     where X, Y are elements that need to be in some sort of relationship for inter-
     pretation purposes

Concrete examples for *interveners* include the focus-sensitive particle *only* and the negative quantifier *nobody* both in English and German in positions that separate a *wh*-pronoun from its associated covert *Q*-complementizer (also labeled *AltShift* by Kotek 2019) needed for interpretation of the *wh*-elements at LF, cf. (4) below.

(4) #/*[$_{CP}$ *Q* [(*wh*) [... [**intervener** [... *wh*]]]]]

We will follow D. Pesetsky in illustrating the pattern for English interveners. English generally allows for both superiority-violating and superiority-obeying questions with D-linked[4] *wh*-phrases (cf. (5)). However, when certain interveners, such as negative quantifiers and focus sensitive operators, occur above the phonologically in-situ *wh*-phrase of a multiple *wh*-question, only the superiority-obeying structure is grammatical and/or interpretable under the intended pair-list reading[5](cf. (6) and (7)).

(5) English superiority-obeying and superiority-violating question
     a. *Which student ____ read which book?*
     b. *Which book did which student read ____?*

---

[4]D-linked (discourse linked) phrases such as *which student* are phrases which imply the existence of a set of contextually determined entities (students) from which the speaker is asking for a choice. Non-D-linked interrogatives such as *who* do not carry such implication.
Superiority is a term to describe a movement asymmetry which is observed in embedded multiple *wh*-clauses in languages such as English, where local movement, i.e. movement of the highest *wh*-element, is favored over movement of the lower *wh*-elements.

[5]We follow H. Kotek 2019 in using *^{PL} to indicate that the sentence is lacking an otherwise expected pair-list reading.

(6) Intervention effect with *no one* in superiority-violating question

    a. *Which book did **no one** give to which student?* (Pesetsky 2000: 80, (100a.))

    b. **$^{\text{PL}}$ Which student did **no one** give which book to ___ ?*

        (Pesetsky 2000: 80, (100b.))

(7) Intervention effect with *only* in superiority-violating question

    a. *Which girl did **only** Mary introduce ___ to which boy?*

        (Pesetsky 2000: 80, (103a.))

    b. **$^{\text{PL}}$ Which boy did **only** Mary introduce which girl to ___ ?*

        (Pesetsky 2000: 80, (103b.))

Previous work on intervention effects has conjectured that they may be universal (Beck 2006: 10) in that (focus- evaluating) operators cause intervention effects when they occur between an alternative-generating item (like a *wh*-phrase) and its associated alternative-evaluating operator (like a Q-operator). This notion of intervention effects makes use of so-called Alternative Semantics for focus (Rooth 1985, 1992) and questions (Hamblin 1973, Beck 2006). Following Rooth (1985), grammatical phenomena involving alternatives are often modeled using a two-tier representation of meaning where alternative- or focus-semantic values are calculated in parallel to ordinary semantic values. Details aside (cf. Rooth 1985, Wold 1996) this paper follows a distinguished-variable proposal described by Beck (2006, 2016). Variables, introduced by focus marking and *wh*-phrases, are assigned a value on the second level of interpretation by a separate (distinguished) variable assignment, h (in addition to the ordinary variable assignment g; cf. Heim & Kratzer 1998). Alternative-evaluating operators can bind distinguished variables to create sets of alternatives which can be used to restrict a focus-sensitive operator or serve as the question denotation. Crucially, in the system described, there are two different alternative-evaluating operators responsible for question and focus evaluation: a selective Q-operator (10a) is responsible for deriving question interpretations by binding corresponding distinguished variables in its scope to form a set of propositions and taking this set as the question meaning. An unselective $\sim$-operator (10b), meanwhile, is employed to model focus.[6]

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[6]Note that the unselectivity of $\sim$ and the selectivity of Q is assumed for English (cf. below) and German, whereas the crosslinguistic picture is less clear. (See forthcoming research by Anna Howell and others at Tübingen University.)

(8) $\sim$ is unselective

    a. CONTEXT: I only introduced Sue to BILL.
    I also only introduced MARY *to* BILL.

    b. */? $[\sim_i \ ...[\sim_{ii} \ ...F_i...F_{ii}]]$

(9) Q is selective

    a. *I only told Sue [$_Q$ who saw* HARRY POTTER]. ... *(I didn't tell Sue who saw 'Fantastic Beasts.')*

    b. $[only_C \ [[\sim C] \ [I \ tell \ Sue \ [Q_i \ [who_i \ saw \ \text{HARRY POTTER}]]]]]$

(10) a. MEANING RULE $\sim$ (unselective)

If $\alpha = [\sim C\beta]$, then for any g, h:

$[\![\alpha]\!]^g$ is only defined if $g(C) \subseteq \{[\![\beta]\!]^{g,h}:$ h is a total distinguished variable assignment$\}$

Then $[\![\alpha]\!]^g = [\![\beta]\!]^g$

$[\![\alpha]\!]^{g,h} = [\![\beta]\!]^{g,\emptyset}$

b. MEANING RULE Q (selective)

If $\alpha = [Q_i\beta]$, then for any g, h:

$[\![\alpha]\!]^g = \{[\![\beta]\!]^{g,\emptyset[x/i]}:$ $x \in D\}$ $[\![\alpha]\!]^{g,h} = \{[\![\beta]\!]^{g,h[x/i]}:$ $x \in D\}$

Crucially, under the assumption that the unselectivity of $\sim$ is warranted, $\sim$ does not allow for higher alternative evaluating operators to associate with variables in its scope. In contrast, Q, being assumed to be selective, binds only co-indexed distinguished variables. Variables that are not co-indexed are not affected. Given the way the system is constructed, unselective operators then do not allow for other alternative-evaluating operators higher in the structure to bind distinguished variables within their scope. Selective operators, in turn, allow for association of higher operators with distinguished variables within their scope. According to Beck (2016), intervention effects then arise as a consequence of the way alternative-evaluating operators interact with one another: unselective alternative-evaluating operators (e.g. $\sim$) block other operators (e.g. Q) from associating with distinguished variables introduced within their scope. Focus evaluation unselectively applies to all variables in the scope of $\sim$ and resets their contribution to their unfocused semantics. Since *wh*-phrases do not have an ordinary (unfocused) semantic value this crashes the derivation. A *wh*-phrase in effect may never have a focus-sensitive operator other than Q as its closest c-commanding potential binder. This is illustrated schematically in (11).

(11) $*[Q \ldots [\sim_{\text{unselective}} [\ldots wh]]]$

In contrast, Q, by virtue of being selective, does not block association from within its scope (cf. (12)).

(12) $[Q_i \ldots [Q_{ii} \ldots wh_{ii} \ldots wh_i]]$

An alternative-semantic analysis of intervention effects à la Beck (and many who follow her influential proposal) thus implies that the grammar requires the presence of a $\sim$-operator and its properties of unselectivity and resetting of focus-semantic values in the scope of quantifiers, without any apparent semantic necessity for this (under the assumption that $\sim$ is indeed an operator reserved for association with focus). Concretely, it is unclear why negative quantifiers should introduce unselective $\sim$. A more desirable approach would either separate focus intervention and quantifier intervention (as has

indeed been done in Beck 1996 and elsewhere) or unify the phenomena along lines different from LF.

Contiguity Theory opens up a new window into a non-LF analysis of the puzzle. As Branan 2018 suggests for right-headed, left-active languages like Japanese, Korean, and Mongolian, intervention effects are a window into failure at the PF sentence structure. Concretely, in a configuration such as the intervention effect configurations reported above, the so-called interveners are blocked from satisfying Contiguity prominence, since they are in a configuration in which a movement strategy for Contiguity, Grouping, is prevented. The approach as envisioned in Branan is desirable since he found independent prosodic evidence for differences between environments that contain and do not contain interveners, an advantage over any theory driven solely by covert operators.

3 Contiguity Theory

Contiguity Theory (Richards 2010, 2014) argues that the construction of phonological structure starts earlier in the grammatical derivation than previously assumed, namely in the narrow syntax. According to Richards, various syntactic movement operations can be motivated by the grammar being compelled to create desirable prosodic configurations, connecting *Probes* and *Goals* via *Agree* (cf. Richards 2014: 2, 73).[7] The relevant prosodic configuration responsible for movement is claimed to be Contiguity, as defined in (13) below.

(13) *Generalized Contiguity* (Richards 2014: 173)
      If α either Agrees with or selects β, α and β must be dominated by a single prosodic node, within which β is Contiguity prominent.

Contiguity prominence is defined as in (14), where ϕ stands for a phonological phrase, a layer of prosody containing at least one pitch accent and combining prosodic words into a single prosodic unit (cf. Büring 2016, chapter 6).

(14) *Contiguity Prominence* (Richards 2014: 168)
      β is Contiguity prominent within ϕ if β is adjacent to a prosodically active edge of ϕ.

---

[7] *Probe, Goal* and *Agree* as used in this paper follows Chomsky (2000, 2001) who proposes that for certain heads that bear features that *Probe*, when those heads are *Merged*, a Probe-Goal relation must be established between these elements. In the system described unvalued features may probe for another, valued instance of the same feature in its c-command domain. If, for example, an element α merges with an element β and α bears an unvalued feature, with β bearing an instance of the same feature but valued, the Probe-Goal relation between α and β provides the feature on α with a value. This is called *Agreement.*

I understand (13) and (14) as follows: In order for Contiguity to be observed in a given case, β *must be (made)* Contiguity-prominent as it does not automatically have this property if the prosodic node dominates both, Probe and Goal.

To achieve Contiguity prominence where it is not given already, three strategies can be employed, as listed in (15).

(15)   a.   Overt Movement
       b.   *Grouping* (Richards 2014: 169)[8]
           Take a pair of prosodic nodes, α and β, and create a ϕ which dominates them both.
       c.   *Contiguity adjunction* (Richards 2014: 169)
           Take a pair of adjacent prosodic nodes, and make one of them a daughter of the other.

Language variation in Richards' theory involves two binary parameters. First, languages may have head-initial or head-final syntactic phrases. Second, languages may place prosodic boundaries that define a level of phrasing sometimes called the Minor Phrase at either the left or the right edges of maximal projections (cf. Richards 2014: 74); that is, they are prosodically 'left active' or 'right active', respectively. The proposal thus yields a syntactic-prosodic typology with four kinds of languages, as classified in Richards (2014) and illustrated in (16); as the table makes clear, all four types do in fact exist.

(16)   Possible Agreement configurations

	head-initial	head-final
left edge of ϕ prosodically active	e.g. English	e.g. Japanese
right edge of ϕ prosodically active	e.g. French	e.g. Georgian

The different values for prosodic and syntactic parameters then explain a variety of phenomena, according to Richards (2014) and Branan (2018). English and French, for example, differ in the availability of Raising past dative experiencers, as illustrated in (17).

(17)   Crosslinguistic variation in Raising past experiencer
      a.   *John seems (to Mary) ___ to be talented.*   (cf. Branan 2018: 50, (40a.))
      b.   *Jean semble (*à Marie) ___ avoir   du   talent.*
          Jean seems   to Marie   to.have of.the talent
          'Jean seems (to Marie) to have talent.'   (Branan 2018: 51, (42c.))

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[8]Note that *Grouping* alters prosodic structure but not linear order.

Under the assumption that in sentences such as in (17) there are two T Probes, both probing a subject which has raised past them both, Contiguity Theory can account for these facts, if the raised subject must be Contiguous with both Ts. In (18a) the subject *John* is in two Agree relationships; it is the goal of both Ts and as such must fulfill both Contiguity relationships. In (18b), raising across a dative experiencer in a right-active language like French, the subject *John* is again in two Agree relationships. Here, however, the subject fails to satisfy Contiguity with both since the prosodically active boundary of the experiencer *to Mary* between the subject and the right edge of the outermost ϕ blocks Contiguity. As a result, movement to matrix specTP across an experiencer is not available in the language.

(18) a. (John T seems ((to Mary) T to ...)$_\phi$)$_\phi$ (Branan 2018: 54, (48))

   b. *John) T seems (to Mary))$_\phi$ T to ...)$_\phi$)$_\phi$

If the experiencer is deprived of its prosodic status or removed, we predict the sentences to become acceptable. This prediction is met (cf. (19)).

(19) a. *Jean **lui**   semble ___ avoir   du   talent.*
         Jean to.him seems   to.have of.the talent
         'Jean seems to him to have talent.'   (Branan 2018: 59, (54b.))

   b. *A **Marie**, Jean semble ___ avoir   du   talent.*
         To Marie   Jean seems   to.have of.the talent
         'To Marie, Jean seems to him to have talent.'   (Branan 2018: 59, (56b.))

Now, let us move on to see where German should be positioned in this syntactic-prosodic typology.

4 The Contiguity configuration of German

4.1 Relevant aspects of German prosodic structure

I follow Richards (2014) in assuming that, within a given language, prosodic activity is the same for all ϕs. As Richards puts it: "We commit ourselves to a parameter space that forces languages to make a choice between left and right edges of maximal projections for defining prosodic boundaries." (Richards 2014: 101)[9] As for any language, the question is, of course, how prosodic phrase boundaries can be empirically diagnosed in German, in order to verify theoretical predictions of the kind made by Contiguity Theory.

The first point to clarify in this context is the relationship between pitch accents and ϕ-phrases. Current research reports that in all-new sentences in German every ϕ-phrase has

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[9]This is a crucial simplifying assumption and may very well turn out false in the long run.

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its own pitch accent. Additionally, every pitch accent indicates a separate phonological phrase. In other words, whenever we see several pitch accents in series, we expect to observe intervening phrase boundaries. Thus, Féry & Kügler (2008) found that pitch accents within a sentence were each in a downstep relation with the preceding one, except for the nuclear pitch accent, which was upstepped in approximately half of the realizations in their study. (Downstep here is defined as a local pitch lowering, which results in a significantly lower scaling of high tones as compared to mere declination; cf. Kügler & Féry 2017: 262f.)

As in English, pitch accents in German are generally interpreted as heads of prosodic phrases (Kügler & Féry 2017: 261). Example (20) shows the observed prosody of an all-new sentence, given this assumption.

(20) a. *((Weil der RAMMler)$_\phi$ (dem REIher)$_\phi$ (den HUMmer)$_\phi$ vorgestellt*
      because the buck.NOM the   heron.DAT the lobster.ACC introduced
      hat)$_\phi$)$_\iota$
      has
      'Because the buck introduced the lobster to the heron.'
      as answer to: *Why were the animals happy?*

   b. Pitch contour for (20a) from Féry & Kügler 2008 (reproduced as Figure 1 in Kügler & Féry 2017)

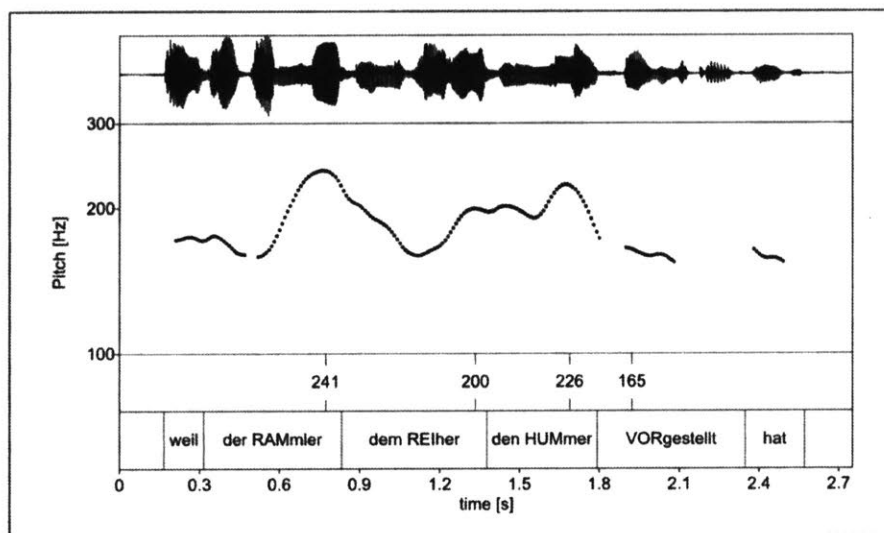**Figure 1.** An all-new sentence with three arguments (Nominative, Dative, Accusative, Verb) and an upstepped nuclear accent (from Féry & Kügler, 2008); the figure displays the sound wave, pitch contour, annotation of F0 maxima in Hertz and a transcription of syllables (capitals indicate pitch accented syllables).

Coming back to suitable diagnostics for prosodic activity, there seem to be two phono-

logical diagnostics discussed in the literature. The first has to do with the association of prosodic phenomena, i.e. phonetic diagnostics for phonological phrase boundaries such as boundary tones, with one edge or the other of a phonological phrase. Richards assumes that boundaries that have prosodic effects associated with them are prosodically active (cf. Richards 2014: 86). Unfortunately for us, German boundary tones at the ends of IPs are in many cases an abstract entity. There is no tonal movement marking the end of the German IP in an overall falling contour in many cases, especially when words have final stress. On the contrary, if a fall is realized on the last word of an IP, it is perceived as a nuclear accent (cf. Féry 1993: 72). So as things stand, boundary tones cannot serve as a reliable diagnostic in German.[10]

The second, and more promising, diagnostic as described by Richards (2018) has to do with the relevant prominence of lexical words in binary branching nominals. The hypothesis is that in prosodically left-active languages, the leftmost element generally receives a pitch boost, whereas in right-active languages, the rightmost element receives a pitch boost (cf. Branan 2018: 39f.). In left-prominent languages the first accented word is higher-pitched than the second (downstep); in right-prominent languages pitch peaks are of more or less the same height (due to declination counteracting the boost). A set of schemata from Richards 2018 (p.3, (3)) is given in (21) below.[11]

(21)   Prosodic activity, declination, and downstep in binary branching nominals[12]
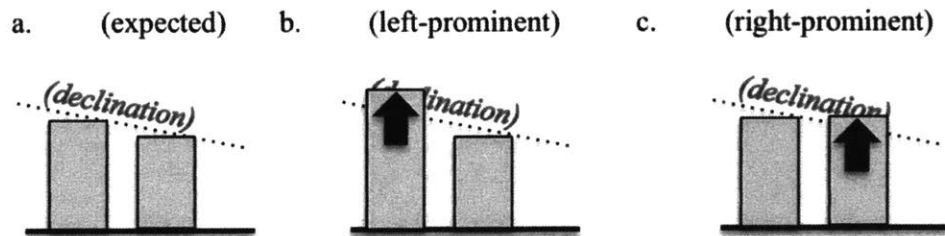
In (22) below I provide an example of the prosody of two 'all-new' German DPs. Examples of this type suggest that German is prosodically left-active, in Richards' terms, at least for DPs. I will assume that this is correct for the purposes of this paper.[13]

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[10]Lengthening of e.g. syllables at the end of phonological phrases could provide the marker that a boundary tone offers in other languages, as suggested by both Edward Flemming and Norvin Richards (p.c.). I will leave this for future research.

[11]"Declination: if you compare, for example, the first pitch peak of each DP (boxed), they're decreasing in height; downstep: within each DP, the second peak is smaller than the first - to a greater degree than declination by itself would explain." (Richards 2018: 2)

[12](a.) must be understood as the underlying cline only, before prominence assignment has taken place, given that every language is assumed to be either left-prominent or right-prominent.

[13]In a recent presentation, Norvin Richards (p.c.) suggests that a more promising diagnostics for prosodic activity in German might be length of stressed vowels. He concludes that by this criterion as well German is left-prominent.

(22) German DPs: typical prosodic activity
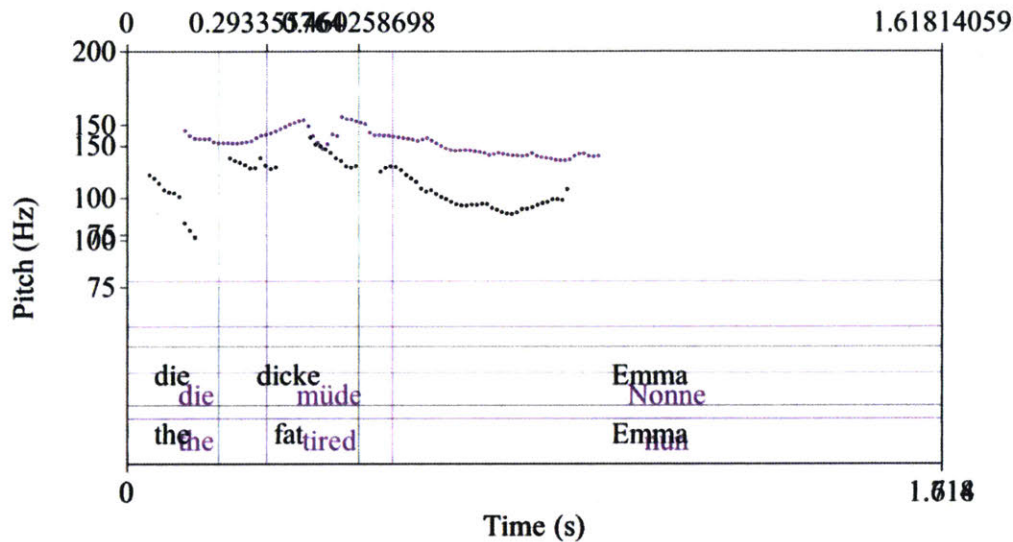
Regarding focused constituents, Féry & Kügler (2017: 263) claim that a focused constituent tends to be aligned with the right-hand edge of a prosodic phrase (ALIGN-FOCUS-R) (cf. Féry 2013) - a constraint which inserts a boundary to the right of a focused constituent if there is none by default. Kügler & Féry 2017 observe that the postfocal position employs an extremely compressed register but no dephrasing or a systematic complete deaccentuation of all pitch accents, i.e. prosodic phrases are retained in the postfocal domain.

4.2 Syntactic headedness in German

German has been described as a mixed-headed language: the complementizer phrase CP, the determiner phrase DP, and the noun phrase NP are clearly head-initial phrases (cf. (23)), little vP is standardly assumed to be head-final (cf. (24)), and prepositional phrases PP are of mixed headedness (cf. (25)). Various arguments for auxiliary phrases, inflectional phrases and tense phrases AuxP/IP/TP which I will subsume under one projection, AuxP, in the following presentation, suggest that they are either head-initial or head-final or non-existent (cf. Haider 1993, Haider 2010, Sternefeld 2006).

(23) *Head-initial phrase*

[NP *Nachrichten von   mir an dich*]
    messages   from me to you

'messages from me to you'   (Haider 2010: 6, (3a.))

(24) *Head-final phrases*
    a. [*jemanden etwas fragen*]$_{VP}$
        someone something ask
        '(to) ask someone something'   (Haider 2010: 6, (1b.))
    b. * [*fragen jemanden etwas*]
        ask   someone   something
        intended: '(to) ask someone something'
    c. [*den Kindern unangenehm*]$_{AP}$
        the-DAT children-DAT unpleasant
        'unpleasant for the children'   (Haider 2010: 6, (2c.))
    d. * [*unangenehm den Kindern*]
        unpleasant   the-DAT children-DAT
        intended: 'unpleasant for the children' (Haider 2010: 6, (2d.))

(25) *Mixed-headedness phrases*
    a. [$_{PP}$ *in* [*das Haus*]]
        in the-ACC house
        'into the house'   (adapted from Haider 2010: 6, (3b.))
    b. [*dem Richter zufolge*]$_{PP}$
        the-DAT judge according
        'according to the judge'   (cf. Haider 2010: 6, fn 6)
    c. * [*zufolge dem Richter*]
        according the-DAT judge
        intended: 'according to the judge'   (cf. Haider 2010: 6, fn 6)

For NegP, I will assume with Jäger (2008) that since *nicht* 'not' is, contrary to standard assumption, not in Neg^0 but in the specifier, the position of *nicht* is inconclusive as to the position of Neg^0. In line with the established assumption of AuxP being right-headed in German, I will, for the purposes of this paper, assume a right-headed NegP. Independent evidence for this comes from diachronic data in Jäger (2008) though note that apart from the argument about analogy to the AuxP projection of the language there is no direct evidence for this claim from verb placement in Modern German. As with the directionality of Neg^0, the relative position of NegP with respect to other projections is hard to determine as well. I will assume that NegP is above vP and below AuxP and refer curious readers to the discussion in Jäger (2008) who suggests that the fact that the subject generally occurs left of *nicht* and outside the focus of negation may indicate that AuxP dominates NegP (cf. also Zeijlstra (2004) who takes this to be the universal order of these two functional projections). Note that if this assumption about the ordering of the maximal projections in the clausal spine is correct, i.e. AuxP is head-final and

above NegP, arguments from the Final over Final Constraint suggest additionally that NegP is head-final. This is because according to the FOFC (cf. (26)) within each clausal spine one switch from head-final projections to head-initial projections is possible but switching back to head-final projections afterwards is not.[14]

(26) *Final-over-Final Constraint (FOFC)* (Sheehan 2012: 4, (3))
If α is a head-initial phrase and β is a phrase immediately dominating α, then β must be head-initial. If α is a head-final phrase, and β is a phrase immediately dominating α, then β can be head-initial or head-final.

Additionally, I am assuming that PPs are adjuncts, either to vP or VP. Normal linear order for these constituents in German is difficult to define, given that the language has scrambling and there is lexical variation in the normal linear order of the constituents as well as definiteness effects that influence the linear order (cf. Lenerz 1977, Höhle 1982, Reis 1987, von Stechow & Sternefeld 1988, Haider 2010, and many others). Von Stechow & Sternefeld (1988: 456) show for example that there are lexical varieties in the normal linear order of the constituents; compare (27) and (28) (^{M} means marked).

(27) *Unterstellen* 'assign' prefers ACC » DAT:
   a. *Er unterstellte den   Lehrling   dem   Meister.*
      he assigned   the-ACC apprentice the-DAT master
      'He assigned the apprentice to the master.'
      (von Stechow & Sternefeld (1988: 456), as cited in Féry 1993: 46, (90))
   b. ^{M} *Er unterstellte dem   Meister den   Lehrling.*
      he assigned   the-DAT master the-ACC apprentice
      'He assigned the apprentice to the master.'
      (von Stechow & Sternefeld (1988: 456), as cited in Féry 1993: 46, (90))

(28) *Ausliefern* 'put at mercy' prefers DAT » ACC:
   a. *Tante Frieda liefert   Onkel Edwald   Tante Amanda   aus.*
      aunt Frieda delivers uncle Edwald-DAT aunt   Amalda-ACC out
      'Aunt Frieda put Aunt Amanda at Uncle Edwald's mercy.'
      (adapted from von Stechow & Sternefeld (1988: 456), as cited in Féry 1993: 46, (91))
   b. ^{M} *Tante Frieda liefert   Onkel Edwald   Tante Amanda   aus.*
      aunt Frieda delivers uncle Edwald-ACC aunt   Amalda-DAT out
      'Aunt Frieda put Uncle Edwald at Aunt Amanda's mercy.'
      (adapted from von Stechow & Sternefeld (1988: 456), as cited in Féry 1993: 46, (91))

---

[14]Thanks to Martin Hackl, p.c., who urged me to make my assumptions about headedness for projections with covert heads and projection ordering in the clausal spine more explicit.

For the purposes of this paper, I will ignore these effects and commit myself to the base syntactic structure in (29).

(29) *Base order assumed for German*
    ..., *that* Subject-NOM Indirect_Object-DAT Direct_Object-ACC Verbal_complex

Following Kiss 2004's analysis on Hungarian, I will assume an independent functional Focus Phrase (FocP) projection which hosts focus sensitive particles such as *only* in its specifier. FocP in the theory assumed here then is Merged below head-initial C (cf. (30)) and below head-final AuxP, and thus due to FOFC head-final.

(30) *Es stimmt   nicht, (*nur) dass (nur) Verena eine   Fokusprojektion*
    it be.correct not   only that only Verena a-ACC focus_projection
    annimmt.
    assumes
    'It is not true that Verena is the only person who assumes a focus projection.'

Equipped with (29) we will assume that there are two types of movements. The first is subject movement from spec$v$P below existential closure to specAuxP, presumably due to the need of the subject to agree with some feature in Aux^0 as the highest finite verbal element. The second is object movement, which allows a definite object to escape existential closure. I will also adopt Larson's (1988) concept of VP shells integrating subject and object into the vP.

(31) VP shell (Larson 1988)
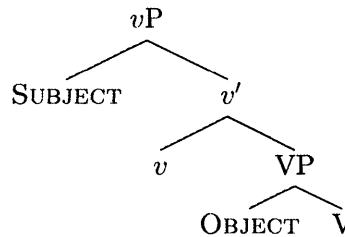
Combining all of these assumptions, we will take the syntactic tree in (32) as the basic structure for a German declarative embedded clause.

(32) Syntactic structure for German embedded clause:[15]

---

[15]Note that the prefix *er-* moves from V to v.

a. ..., *weil   der   Noah   den   Peter   in der Küche   ertappt*
 ... because the_NOM Noah_NOM the_ACC Peter_ACC in the kitchen caught
hat.
has
'... because Noah caught Peter in the kitchen.'

b.

```
                        CP
                        |
                        C'
                    ┌───┴────────┐
                   C⁰          AuxP
                   weil      ┌───┴──────┐
                          DP₁          Aux'
                         ─────      ┌───┴──────┐
                        der Noah   NegP       Aux⁰
                                ┌───┴───┐     hat
                                ∅      Neg'
                                    ┌───┴────────┐
                                   vP          Neg⁰
                               ┌───┴───┐        ∅
                              DP₂     vP
                             ─────  ┌──┴───┐
                            den Peter PP   vP
                                   ─────  ┌─┴──┐
                                in der Küche t₁  v'
                                             ┌───┴───┐
                                            VP      v⁰
                                          ┌─┴─┐  er-tappt
                                          t₂ V⁰
                                             er
```
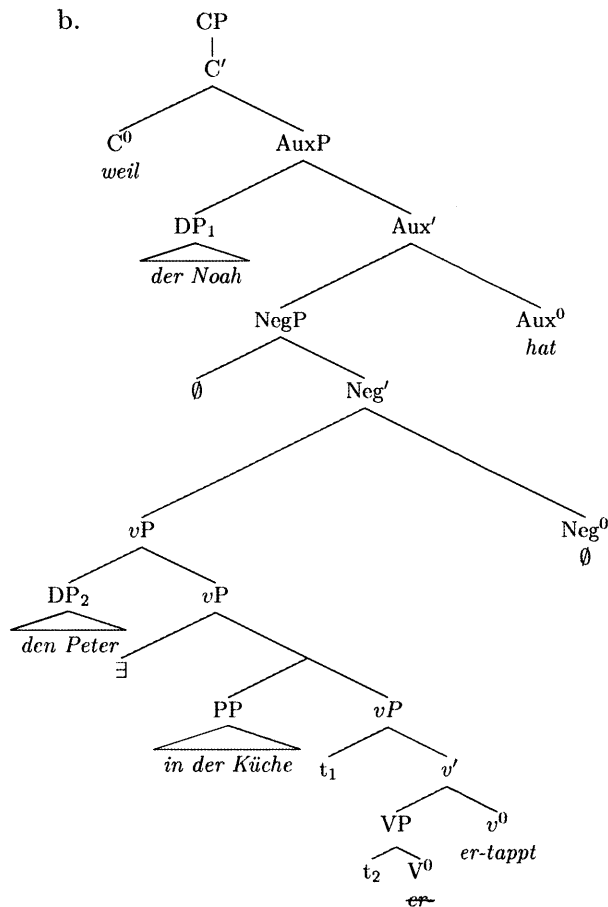
Additionally, German features a common property of Germanic languages, the so-called V2 property: the finite verb is in the second constituent in a matrix clause, following an arbitrary, single, clause-initial constituent (cf. Wackernagel 1892, Fourquet 1938, Holmberg 2005). This requires head movement of Aux⁰ to C⁰ if the position in the 'prefield', also called V1, is filled (cf. (33a)), and additional subject (cf. (33b)) or object movement (cf. (33c)) to specCP if V1 is not filled.

(33) a. *Gestern   hat der   Noah den   Peter in der   Küche ertappt,*
        yesterday has the-NOM Noah the-ACC Peter in the-DAT kitchen caught,
        wie er...
        as he...

21

'Yesterday, Noah caught Peter in the kitchen when he...'

b. *Der   Noah hat den   Peter in der   Küche   ertappt,   wie er...*
the-NOM Noah has the-ACC Peter in the-DAT kitchen caught, as   he...
'Noah caught Peter in the kitchen when he...'

c. *Den   Peter hat der   Noah in der   Küche   ertappt,   wie er...*
the-ACC Peter has the-NOM Noah in the-DAT kitchen caught, as   he...
'Noah caught Peter in the kitchen when he...'

In Richard's parameter space and for the purposes of this paper, we classified German in this section as a left-active, mixed-headed language with the clausal spine in (34).

(34)   *Clausal spine assumed for German*
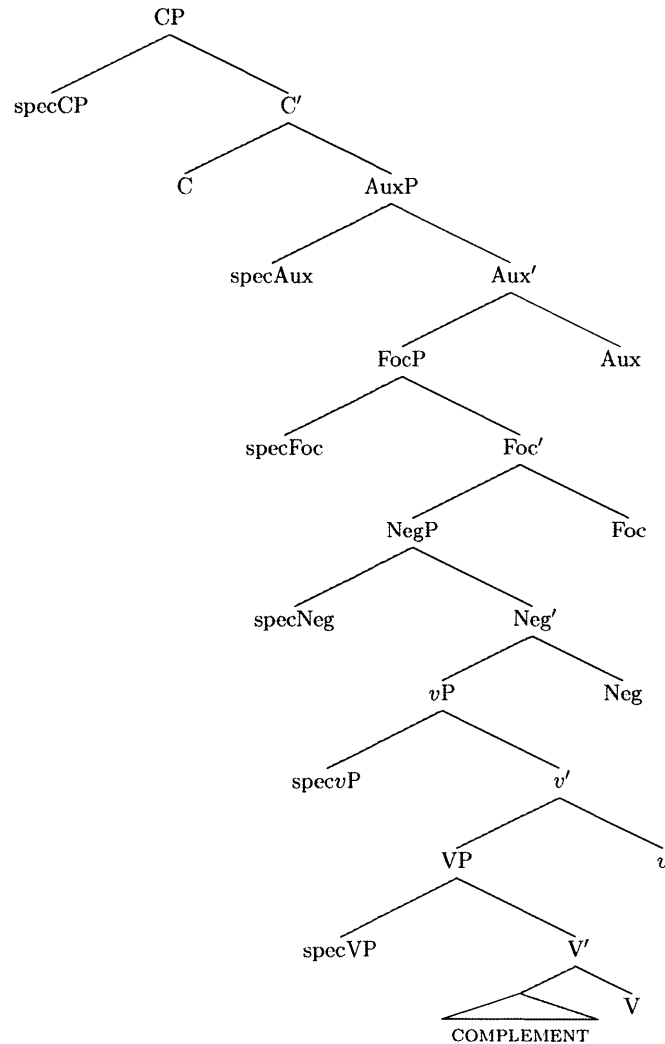
5 Core Intervention analysis in Contiguity Theory

5.1 A problem for Contiguity

The following section will discuss a problem for Contiguity which is both problematic for non-intervention and intervention effect configurations and which is solved via a covert movement operation in the prosodic tree labeled *Grouping*. Consider the grammatical sentence in (35a) with the postulated syntactic and prosodic structure in (35b) and (35c) respectively. The symbol "(" illustrates that the language is considered prosodically left active.

(35) Illustration of Contiguity-theoretic problem in German[16]

    a. *Gestern   hat der   Noah niemanden ertappt.*
        yesterday has the-NOM Noah nobody-ACC caught
        'Yesterday, Noah caught nobody.'

    b. Syntactic structure

---
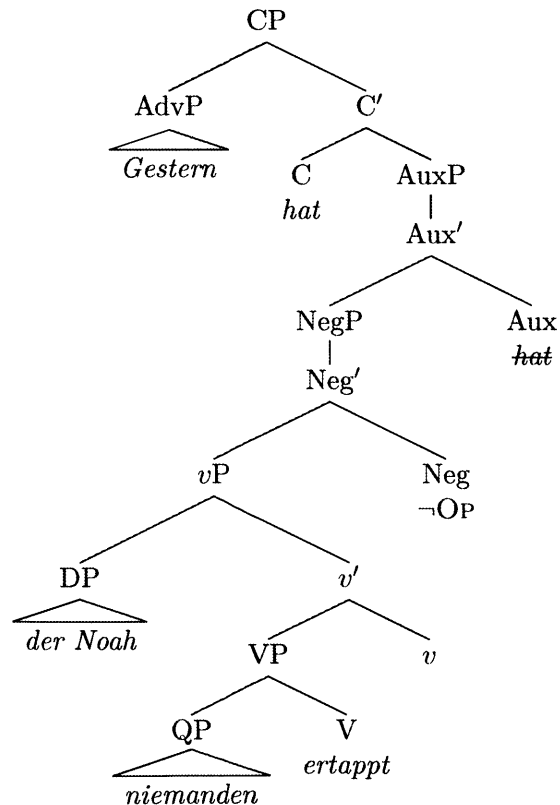
[16]Note that in order to avoid raising of the subject 'Noah' from spec*v*P into specCP to meet the condition Affix Support we filled the V1 position with the temporal adverbial *gestern* 'yesterday'. We leave open where exactly the adverbial originated (somewhere as an adjunct to *v*P).

c. Prosodic structure

$(\phi_{CP}$

$(\phi_{AdvP}$ ω_C $(\phi_{AuxP}$
Gestern   *hat*

$(\phi_{NegP}$ ω_{Aux}
   ~~*hat*~~

$(\phi_{vP}$ ω_{Neg}
   $\neg OP$

$(\phi_{DP}$ $(\phi_{VP}$ ω_v
der Noah

$(\phi_{QP}$ ω_V
niemanden   *ertappt*
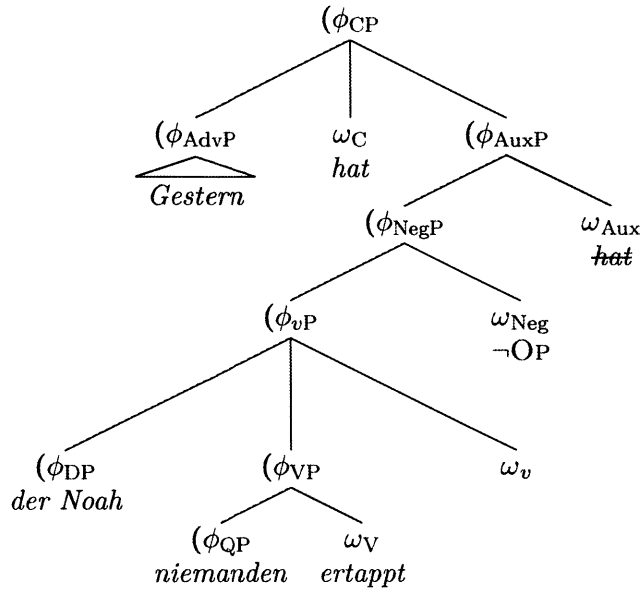
The mapping between syntactic and prosodic structure in (35) follows an approach to prosody called Match Theory (Selkirk 2009, 2011, Elfner 2012, Bennett et al 2016). Under Match Theory, prosodic structure is essentially isomorphic with syntactic structure (cf. Richards 2014: 78). The mapping principles assumed in (35) are given in (36) below.

(36)   *Mapping Principles* (Richards 2014: 80, (40))
     a. Every syntactic (possibly complex) head corresponds to a prosodic word ω.
     b. Every XP corresponds to a phonological phrase ϕ.
     c. Every clause corresponds to an intonational phrase ι.

Note now that there is a Contiguity-theoretic problem with the prosodic structure in (35c) as noted already in Richards (2014). The negative quantifier *niemanden* 'nobody' has entered into an Agree relationship with Neg, but the prosodic structure does not satisfy Contiguity. There is no prosodic node that minimally dominates both Neg and *niemanden* in which *niemanden* is Contiguity prominent. The only nodes that dominate both Neg and *niemanden* are ϕ_{NegP}, ϕ_{AuxP}, and ϕ_{CP} but ϕ_{QP} *niemanden* is not Contiguity-prominent in any of these ϕ because of ϕ_{DP} which is between *niemanden* and the left edge of ϕ_{NegP}.

The prosodic structure that would fulfill Contiguity is illustrated in (37) below, where $\phi_{???}$ dominates both, ω_{Neg} and the ϕ_{QP} that it Agrees with, while *niemanden* is Conti-

guity prominent in it.[17] The operation deriving (37) is called *Grouping* and is defined in (38) below, as repeated from (15b) above.

(37)   Grouping as a solution to Contiguity-theoretic problem above

$$
\begin{array}{c}
(\phi_{CP} \\
\diagup \ \mid \ \diagdown \\
(\phi_{AdvP} \quad\quad \omega \quad\quad (\phi_{AuxP} \\
\diagup\diagdown \quad\quad\quad hat \quad\quad\quad \diagup \ \diagdown \\
Gestern \\
\quad\quad\quad (\phi_{NegP} \quad\quad\quad\quad \omega_{Aux} \\
\quad\quad\quad \diagup \ \diagdown \quad\quad\quad\quad \cancel{hat} \\
\quad\quad (\phi_{DP} \quad\quad (\phi_{???} \\
\quad\quad der\ Noah \quad\quad \diagup \ \diagdown \\
\quad\quad\quad\quad (\phi_{vP} \quad\quad \omega_{Neg} \\
\quad\quad\quad \diagup \ \diagdown \quad\quad \neg OP \\
\quad\quad (\phi_{VP} \quad\quad \omega_v \\
\quad\quad \diagup \ \diagdown \\
(\phi_{QP} \quad\quad \omega_V \\
niemanden \quad ertappt
\end{array}
$$
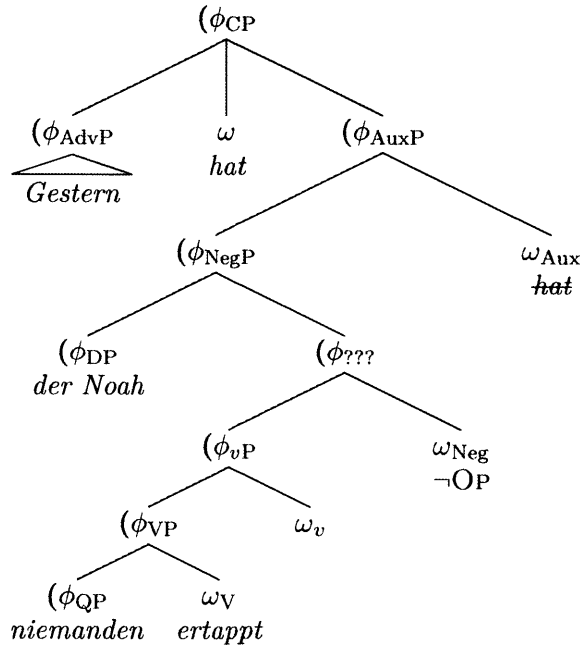
(38)   *Grouping* (Richards 2014: 169)
Take a pair of prosodic nodes, α and β, and create a ϕ which dominates them both.

We understand (38) as an operation of shortest move without traces which creates a new prosodic node ϕ in the prosodic structure and in which a goal β satisfies Contiguity for its probe α.

In a sentence with a proper name instead of a negative quantifier as the direct object such as (39), we would not expect Grouping to happen, since the object does not have to Agree with a covert operator in ω_{Neg} in order to be licensed. A prosodic structure is in (39b) below.[18]

(39)   a.   *Gestern   hat der   Noah den   Peter ertappt.*
        yesterday has the-NOM Noah the-ACC Peter caught

---

[17]Note that instead of Grouping in the prosodic structure overt syntactic movement of the DP *der Noah* to specAuxP could have been proposed. I need to assume that the derivation simultaneously creates both syntactic and prosodic trees and that Probe-Goal relations are in place immediately before any additional phrases are Merged to rule out this possibility.

[18]I abstract away from possible effects of Agree between v and the object here.

'Yesterday, Noah caught Peter.'

b.

$(\phi_{CP}$

$(\phi_{AdvP}$ ω $(\phi_{AuxP}$

Gestern   *hat*

$(\phi_{vP}$ ω_{Aux}

~~*hat*~~

$(\phi_{DP}$ $(\phi_{VP}$ ω_v

der Noah

$(\phi_{DP}$ ω_V

den Peter   *ertappt*
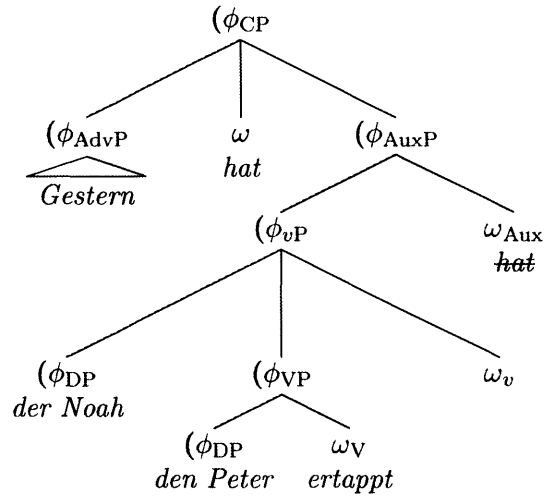
Note that for an embedded clause such as (40) below the theoretical status is not so clear. The structure could have undergone Grouping as in (37) above to satisfy the Contiguity requirement for *niemanden* but, as far as I understand, could also have moved out *der Noah* for independent reasons, e.g. Affix support (cf. Richards 2014). Affix support has been satisfied by the AdvP in the matrix clause in (39) above, but needs to be satisfied by movement in the embedded clause in (40). Under the assumption that traces do not block Contiguity, Contiguity for *niemanden* would then be satisfied without Grouping, as ϕ_{NegP} comprises both ω_{Neg} and *niemanden* and *niemanden* is Contiguous within ϕ_{NegP}. This implies that the structure does not fully incrementally check Contiguity, since, once Neg is Merged, before the DP has moved out of spec$v$P, *niemanden* would not fulfill Contiguity. Only after Aux is Merged, requiring specAux to be filled and consequently after the DP *der Noah* is moved out of spec$v$P, *niemanden* is Contiguous. Perhaps Contiguity has to be fulfilled only once the full phase is created, right before Spell-Out.

(40)   a.   ..., *weil*   *der*   *Noah niemanden*   *ertappt hat.*
           ... because the-NOM Noah nobody-ACC caught has
           '... because Noah caught nobody.'

b.

$(\phi_{CP}$

ω_C
weil

$(\phi_{AuxP}$

$(\phi_{DP}$
der Noah

$(\phi_{NegP}$

ω_{Aux}
hat

$(\phi_{vP}$

ω_{Neg}
¬OP

$(\phi_{DP}$
~~der Noah~~

$(\phi_{VP}$

ω_v

$(\phi_{QP}$ ω_V
niemanden *ertappt*
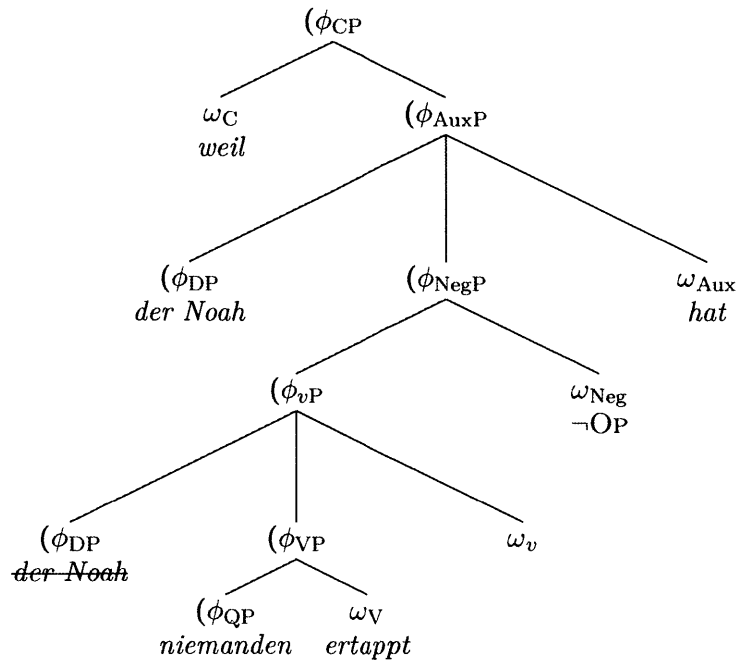
The assumption that Contiguity fulfillment needs to take into account everything that has been Merged between the Spell-out of one phase and the Spell-out of the next phase would then explain the contrast in (41). While a direct object proper name is perfectly acceptable in specAuxP, the direct object negative quantifier *niemanden* is at best severely degraded.

(41)   a.   ..., *weil*   *den*   *Peter der*   *Noah ertappt hat.*
           ... because the-ACC Peter the-ACC Noah caught has
           '... because Noah caught Peter.'

       b.   *??..., weil*   *niemanden der*   *Noah ertappt hat.*
           ...   because nobody-ACC the-NOM Noah caught has
           intended: '... because Noah caught nobody.'

Since in the prosodic structure in (42a) no phrase needs to fulfill Contiguity with an operator higher up, the DP *den Peter* can move into specAuxP for Affix Support reasons. In (42b), however, movement of *niemanden* is not possible, since the QP first needs to fulfill Contiguity within NegP. Contiguity is blocked, however, by the subject DP *der Noah*. The subject DP could move out of specvP to fulfill Affix Support and would then be Contiguous within CP. This gives us the structure in (40b). Grouping would give us a structure similar to (37) in which *der Noah* is in a position outside of the phase *v*P, whereas *niemanden* is inside *v*P. Perhaps, then, the grammar can only satisfy Affix Support by moving the higher subject *der Noah* from outside of the *v*P phase into specAuxP.

(42)   a. Object movement fulfilling Affix Support

$(\phi_{CP}$

ω_{C} *weil*

$(\phi_{AuxP}$

$(\phi_{DP}$ *den Peter*

$(\phi_{vP}$

ω_{Aux} *hat*

$(\phi_{DP}$ *der Noah*

$(\phi_{VP}$

ω_{v}

$(\phi_{DP}$ ~~den Peter~~

ω_{V} *ertappt*
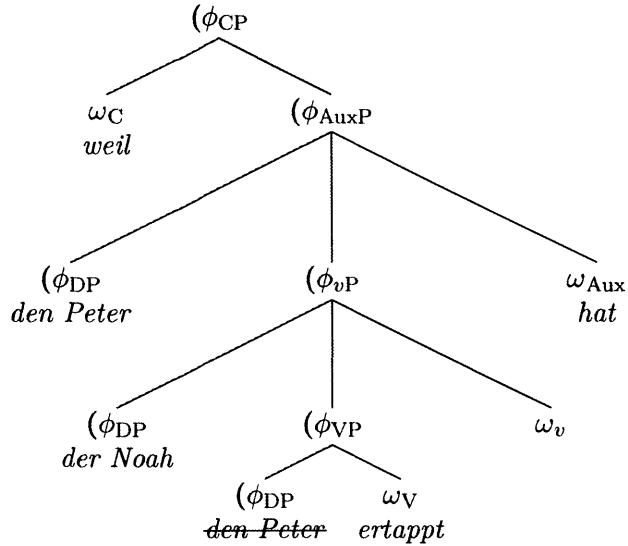
b. Subject blocking Contiguity for direct object negative quantifier

$^{*}(\phi_{CP}$

ω_{C} *weil*

$(\phi_{AuxP}$

$(\phi_{NegP}$

ω_{Aux} *hat*

$(\phi_{vP}$

ω_{Neg} $\neg OP$

$(\phi_{DP}$ *der Noah*

$(\phi_{VP}$

ω_{v}

$(\phi_{QP}$ *niemanden*

ω_{V} *ertappt*
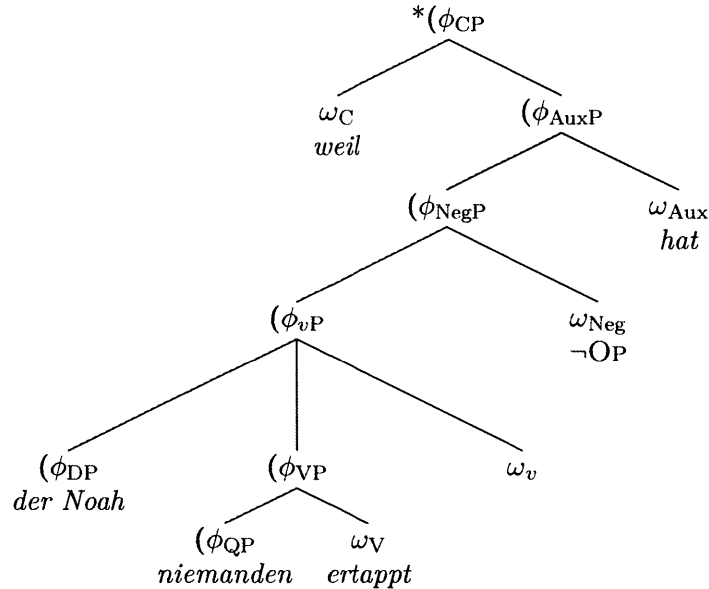
Contrast (42b) with the sentence in (43a). In the corresponding prosodic tree in (43b) Contiguity for *niemand* is initially fulfilled in NegP. *Niemand* can then move to specNegP and presumably further up to specAuxP to satisfy Affix Support. This accounts for the contrast in (41) above.

(43)   a. ..., *weil niemand den Peter ertappt hat.*
        ... because nobody-NOM the-ACC Peter caught has

28

'... because nobody caught Peter.'
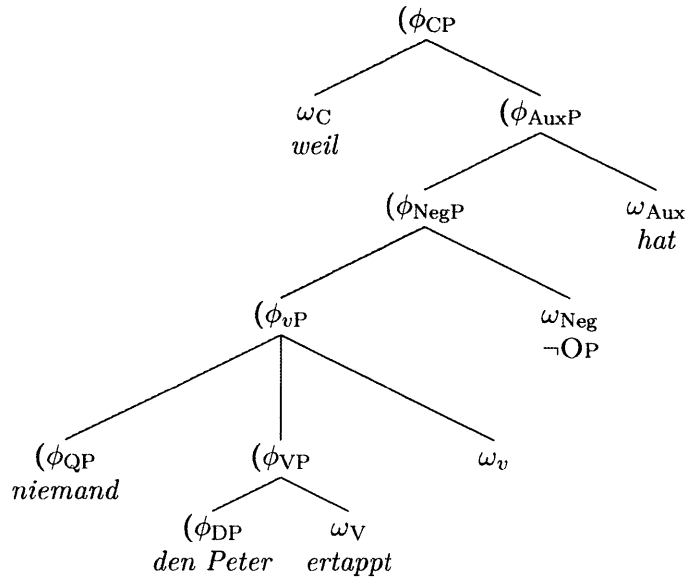
b. Subject negative quantifier fulfilling Contiguity is free to satisfy Affix Support as well

$(\phi_{CP}$
$\qquad \omega_{C}$ $\qquad (\phi_{AuxP}$
$\qquad weil$
$\qquad\qquad (\phi_{NegP}$ $\qquad \omega_{Aux}$
$\qquad\qquad\qquad\qquad hat$
$\qquad\qquad (\phi_{vP}$ $\qquad \omega_{Neg}$
$\qquad\qquad\qquad\qquad \neg OP$
$\qquad (\phi_{QP}$ $\quad (\phi_{VP}$ $\quad \omega_{v}$
$\qquad niemand$
$\qquad\qquad (\phi_{DP}$ $\quad \omega_{V}$
$\qquad\qquad den\ Peter$ $\ ertappt$

Going back to the Grouping operation introduced earlier: crucially, according to Branan 2018: 221ff.) Grouping can be detected by a particular prosodic structure which he calls *span-marking*. Branan discusses this for Mongolian, where he finds significant differences between prosodic contours surrounding two focus particles.

If Branan (2018) is right in that Grouping is reflected in the prosody, we predict that there should be a particular prosodic signature for sentences in which Grouping is presumed to have occurred, in contrast to sentences in which Contiguity can be satisfied without Grouping. A schema for the syntactic structure of a ditransitive sentence with options for focus and negative quantifiers is in (44b). The corresponding prosodic structures are in (45a) before and (45b) after Grouping for the negative quantifier and in (46a) and (46b) for the focus particle respectively.

(44) a. *Heute will eine Nonne {einem Lehrer/niemandem/(nur) einem*
today wants a-NOM nun a-DAT teacher/nobody-DAT/only a-DAT
Lehrer_F} ein Lama in Murnau malen.
teacher a-ACC lama in Murnau draw
'Today, a nun wants to draw a lama in Murnau for a teacher.'

29

b. Syntactic structure for ditransitive sentence
modeled after Richards (2014: 88, (27b.))[19]

```
                        CP
                ┌───────┴───────┐
              AdvP              C'
              ◢◣         ┌──────┴──────┐
             Heute       C            FocP
                        will           │
                                      Foc'
                                ┌──────┴──────┐
                              AuxP           Foc
                               │              ~
                              Aux'
                        ┌──────┴──────┐
                      NegP           Aux
                       │             w̶i̶l̶l̶
                      Neg'
                ┌──────┴──────┐
               vP            Neg
          ┌─────┴─────┐      ¬Op
       SUBJECT        v'
         ◢◣      ┌─────┴─────┐
         ...    IO          v'
               ◢◣     ┌──────┴──────┐
               ...   VP             v
                ┌─────┴─────┐
               DO          V'
               ◢◣     ┌─────┴─────┐
               ...   VP           V
                ┌─────┴─────┐    malen
            ADJUNCT        V
              ◢◣
              ...
```

---
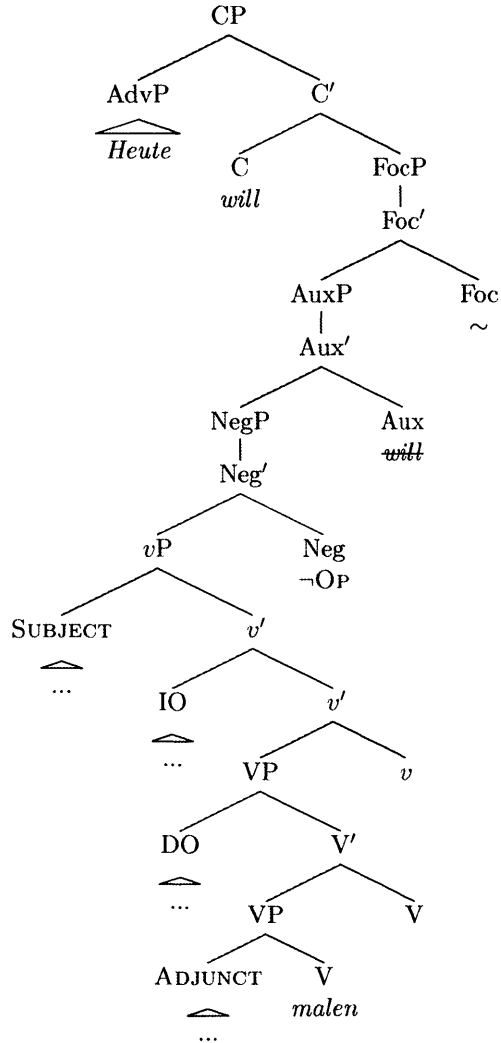
[19]Note that I am unsure why the complement of the verb which should be closer to the verb than the adjunct is in fact not assumed to be adjacent to the verb in the base structure. For the present argument the ordering of the direct object and the adjunct in the base structure do not matter, however. Also note that we should be more explicit about movement of the V *malen* to *v*. Again, given that verb movement is not crucial for the following argument we avoid further discussion of this for now.

30

(45) Prosodic structure for negative quantifier before and after Grouping

a.

```
                        (CP
            _____/ |  _____
          (Adv          ωC           (NegP
          _/\_          will        __/ \__
         Heute                   (vP        ωNeg
                          _____/|_____      ¬OP
                         /    /  |   \     \
                 (SUBJECT (IO  (DO  (VP      ωV
                   _/\_   _/\_  _/\_  /\
                   ...    ...   ...  (PP   ωV
                                    _/\_  malen
                                     ...
```

b.

```
                        (CP
            _____/ |  _____
          (Adv          ωC           (NegP
          _/\_          will       __/ \__
         Heute                (SUBJECT    (φ???
                                _/\_      __/ \__
                                ...    (vP        ωNeg
                                     __/|\__        ¬OP
                                    /  |   \  \
                                (IO (DO (VP    ωV
                                _/\_ _/\_ /\
                                ...  ...  (PP   ωV
                                         _/\_  malen
                                          ...
```
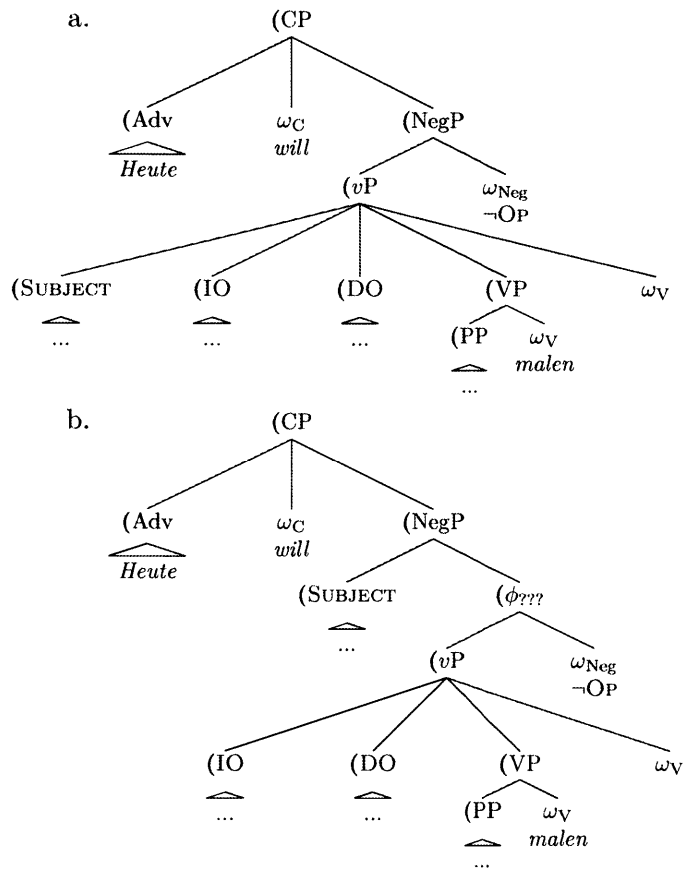
(46) Prosodic structure for focus particle before and after Grouping

a.

```
                        (CP
            _____/ |  _____
          (Adv          ωC           (FocP
          _/\_          will        __/ \__
         Heute                   (vP        ωFoc
                          _____/|_____      ~
                         /    /  |   \     \
                 (SUBJECT (IO  (DO  (VP      ωV
                   _/\_   _/\_  _/\_  /\
                   ...    ...   ...  (PP   ωV
                                    _/\_  malen
                                     ...
```

31

b.

(CP

(Adv ω_C (FocP
⌒   *will*
Heute

(SUBJECT   (ϕ???
⌒
...   (*v*P ω_{Foc}
       ~

(IO   (DO   (VP ω_V
⌒   ⌒
...   ...   (PP ω_V
      ⌒   *malen*
      ...
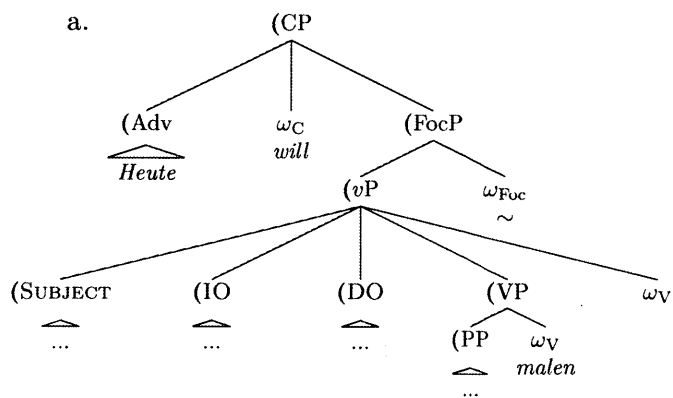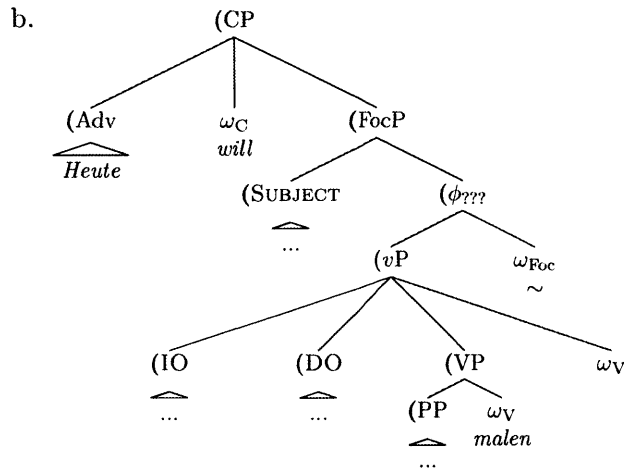
Given that the theoretical prediction of span-marking surrounding Grouping could neither be confirmed nor disconfirmed for German by extant data we ran a short pilot experiment which will be discussed in the following subsection.

5.2 Pilot experimental work on prosodic evidence for Grouping

5.2.1 Methods

We examined elements *nur* 'only' and *niemand* 'nobody', both of which have been claimed to be possible interveners and are expected to trigger Grouping. The test sentences were modeled after Truckenbrodt (2007: 445, (22)). We made an effort to use sonorant segments in the stimuli as much as possible for optimal F_0 tracking. We tested for both definite and indefinite NPs, the latter being more sonorant while the former sounded more natural.[20] In (47) to (50) the (a.)-examples are non-Grouping contexts, whereas for (b.) and (c.) we expect Grouping; the possible interveners are underlined. The locative adjunct *in Murnau* was added to serve as a buffer before the verb, in order to make sure the nuclear accent which generally goes on the last constituent before the verb in German would not interfere with the prosody we predicted for the negative quantifier and the focused constituent. Both, transitive and ditransitive sentences were tested to understand the effect that different sentence lengths have on declination.[21] The utterances were produced, recorded and analyzed by the author; recording and labeling took place with Praat. We recorded sentences in semi-random order, e.g. we did

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[20]Note that we mostly used male rather than female first names as dummy NPs as the case on their definite article can be distinguished by morphology: der-NOM Noah, dem-DAT Noah, den-ACC Noah, whereas female nominative and accusative have the same morphology: die-NOM Luise, der-DAT Luise, die-ACC Luise.

[21]Féry & Kügler (2008, 699f.) report that the average pitch values of an initial nominative in a whole-focused sentence are clearly higher when the sentence contains more arguments.

not contrast them with the base line sentence or with each other by recording them in immediate succession.

(47) Definite NP, transitive sentence with locative adjunct
   a. *Heute will der Noah die Lena in Murnau malen.*
      'Today, Noah wants to draw Lena in Murnau.'
   b. *Heute will der Noah niemanden in Murnau malen.*
      'Today, Noah wants to draw nobody in Murnau.'
   c. *Heute will der Noah nur die Lena$_F$ in Murnau malen.*
      'Today, Noah only wants to draw Lena$_F$ in Murnau.'

(48) Indefinite NP, transitive sentence with locative adjunct
   a. *Heute will eine Nonne einen Lehrer in Murnau malen.*
      'Today, a nun wants to draw a teacher in Murnau.'
   b. *Heute will eine Nonne niemanden in Murnau malen.*
      'Today, a nun doesn't want to draw anyone in Murnau.'
   c. *Heute will eine Nonne nur einen Lehrer$_F$ in Murnau malen.*
      'Today, a nun only wants to draw a teacher$_F$ in Murnau.'

(49) Definite NP, ditransitive sentence with locative adjunct
   a. *Heute will der Noah der Lena in Murnau ein Lama malen.*
      'Today, Noah want to draw a lama in Murnau for Lena.'
   b. *Heute will der Noah niemandem in Murnau ein Lama malen.*
      'Today, Noah doesn't want to draw a lama in Murnau for anyone.'
   c. *Heute will der Noah nur der Lena$_F$ in Murnau ein Lama malen.*
      'Today, Noah want to draw a lama in Murnau only for Lena$_F$.'

(50) Indefinite NP, ditransitive sentence with locative adjunct
   a. *Heute will eine Nonne einem Lehrer in Murnau ein Lama malen.*
      'Today, a nun wants to draw a lama in Murnau for a teacher.'
   b. *Heute will eine Nonne niemandem in Murnau ein Lama malen.*
      'Today, a nun doesn't want to draw a lama in Murnau for anyone.'
   c. *Heute will eine Nonne nur einem Lehrer$_F$ in Murnau ein Lama malen.*
      'Today, a nun wants to draw a lama in Murnau only for a teacher$_F$.'

5.2.2 Results and discussion

The figures below depict the intonational contour of the sentences in (47) to (50). We overlaid the base sentence with the target sentence with the proposed interveners *niemand* 'nobody' and *nur* 'only' to ease representation. Figure 1 shows the proposed pitch

peaks on each individual prosodic phrase as well as declination. No pitch compression after the critical element *niemand* can be observed, as far as we can tell, and we do also not observe any other unusual behavior for the *niemand* phrase itself.
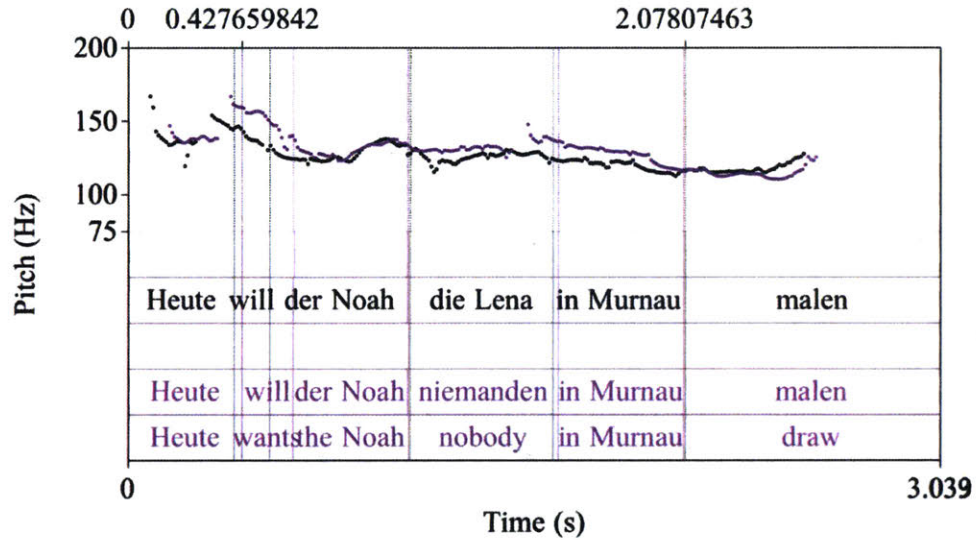

Figure 1: Definite NP, transitive sentence with locative adjunct

In Figure 2, we see an upstepped tone on *niemand* which is different from the falling contour with *einen Lehrer*.
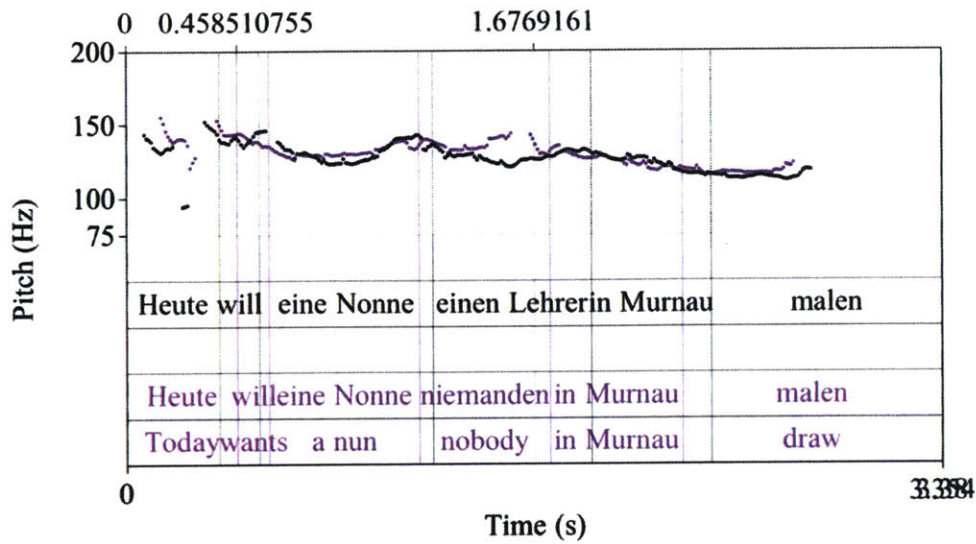
Figure 2: Indefinite NP, transitive sentence with locative adjunct

Figure 3 shows a pitch peak on focused *Lena*; however, the post-focal area does not seem to be different in terms of pitch. What can be observed is that the sentence with the intervener is slightly delayed, even in prefocal position. This is also true for the sentence with the focus-sensitive particle *nur* in Figure 4. Both intonational contours show a slight upstep on the focused noun, and thus a slightly deeper fall before the locative adjunct. This is rather subtle, however.
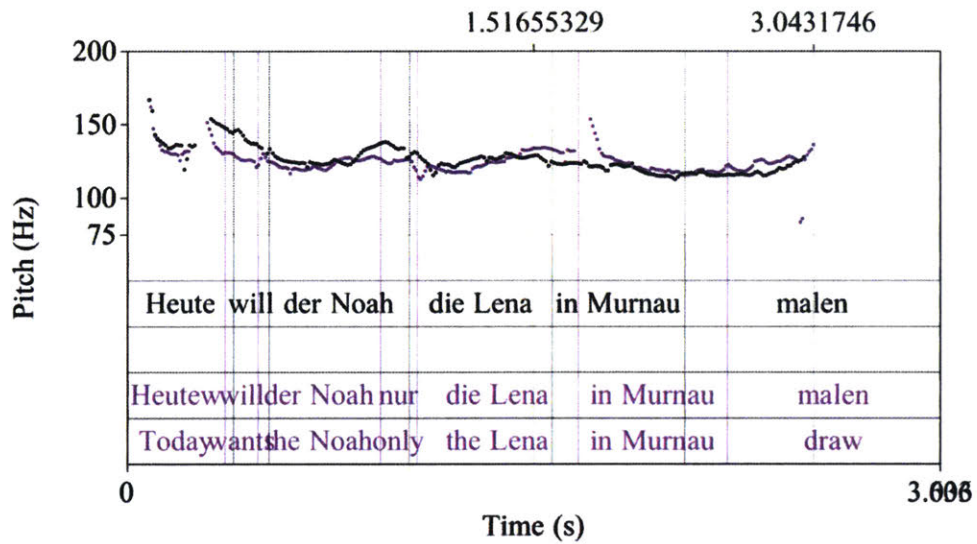
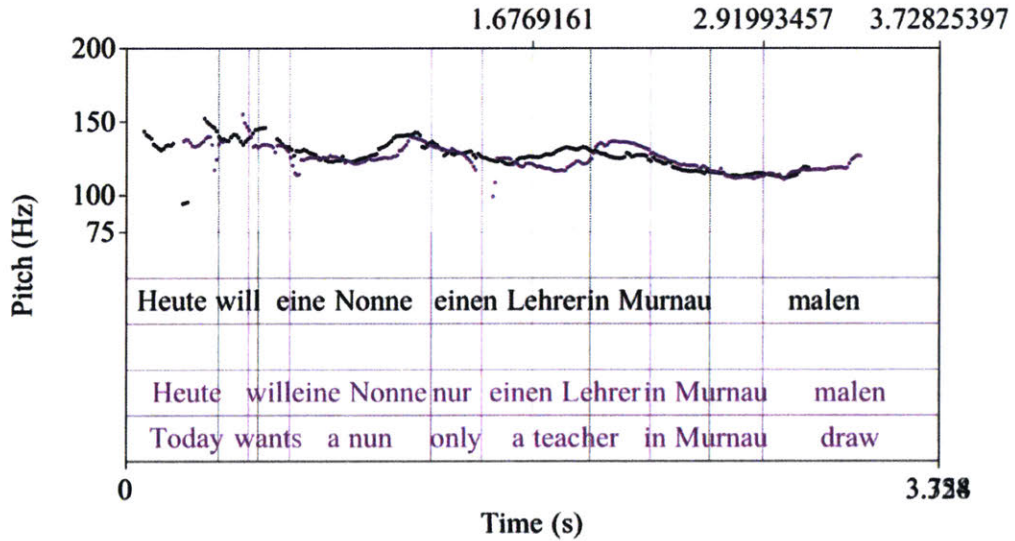Figure 3: Definite NP, transitive sentence with locative adjunct

Figure 4: Indefinite NP, transitive sentence with locative adjunct

For the ditransitive sentences in Figure 5 we do not observe a delay of the structure with a critical item in the case of *niemand*. There is a slight delay for the focus condition in

Figure 6 after the *nur*. Given that this is an additional word, this is probably unsurprising. Otherwise, the pitch contours are suspiciously similar. *Lena* gets a slight pitch boost, associating with *nur* in Figure 6, however.

Figure 5: Definite NP, ditransitive sentence with locative adjunct
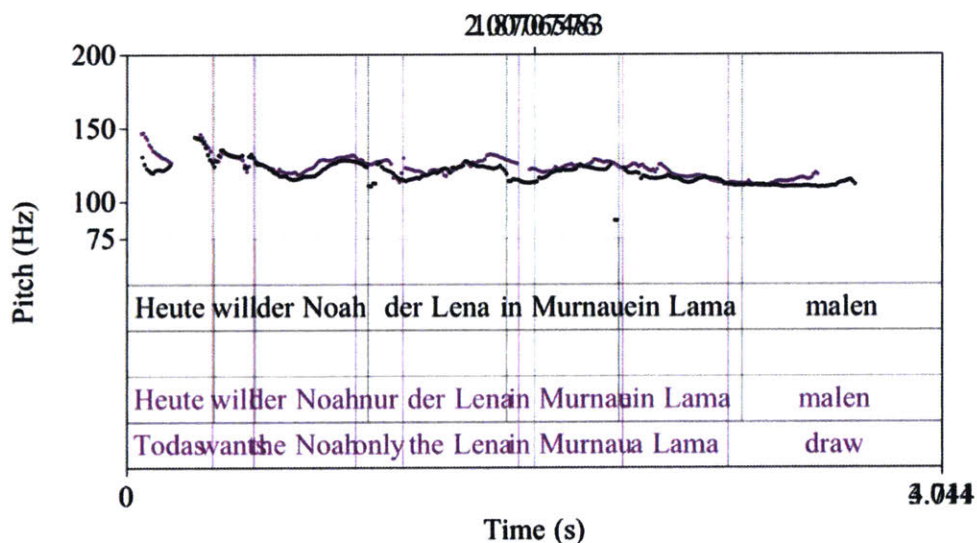
Figure 6: Definite NP, ditransitive sentence with locative adjunct

In Figure 7, the contour with the negative quantifier gets delayed before the critical item. Additionally, this prosodic contour is clearly higher over the full course of the utterance than the contour of the baseline sentence. Figure 8 shows the observed delay: this time, however, it occurs only after the focus sensitive item is uttered.

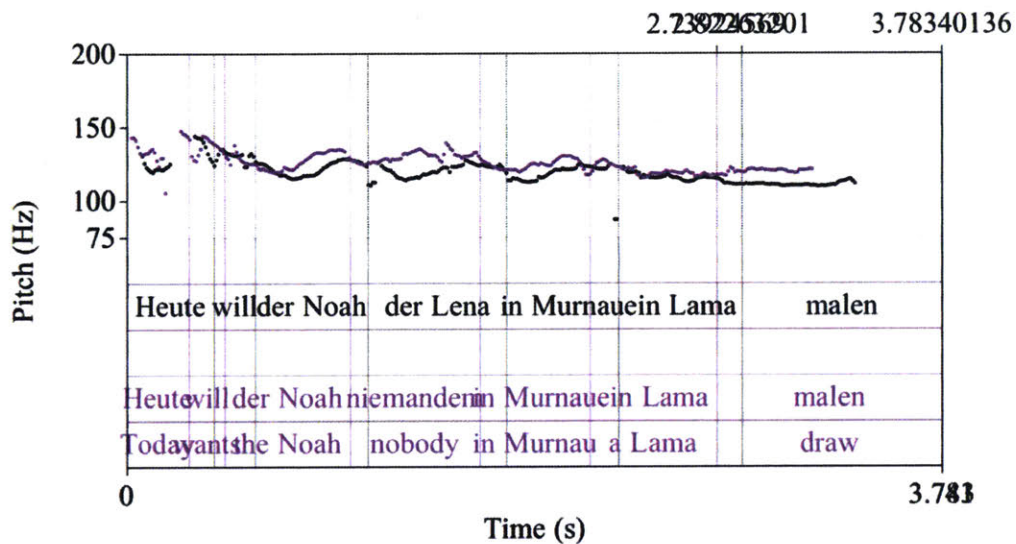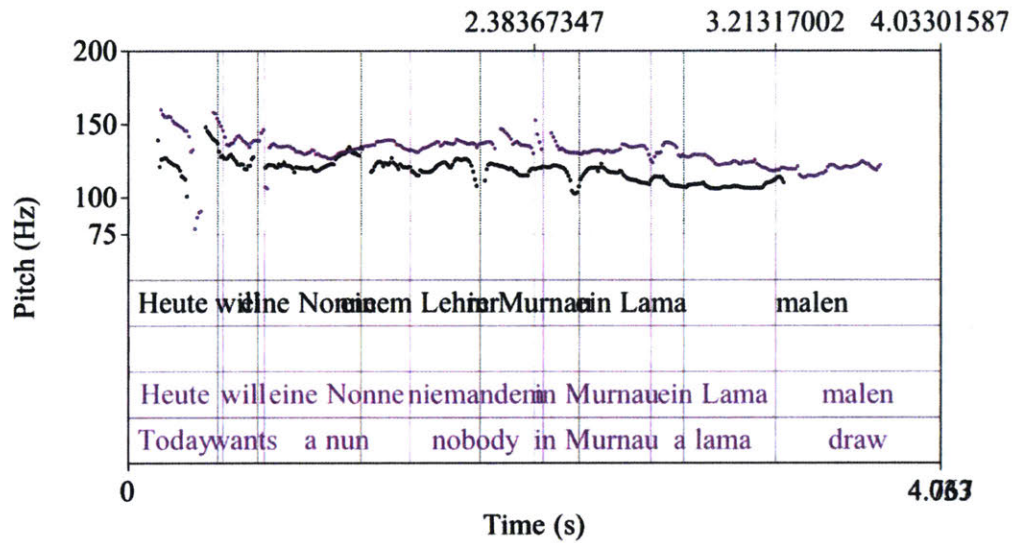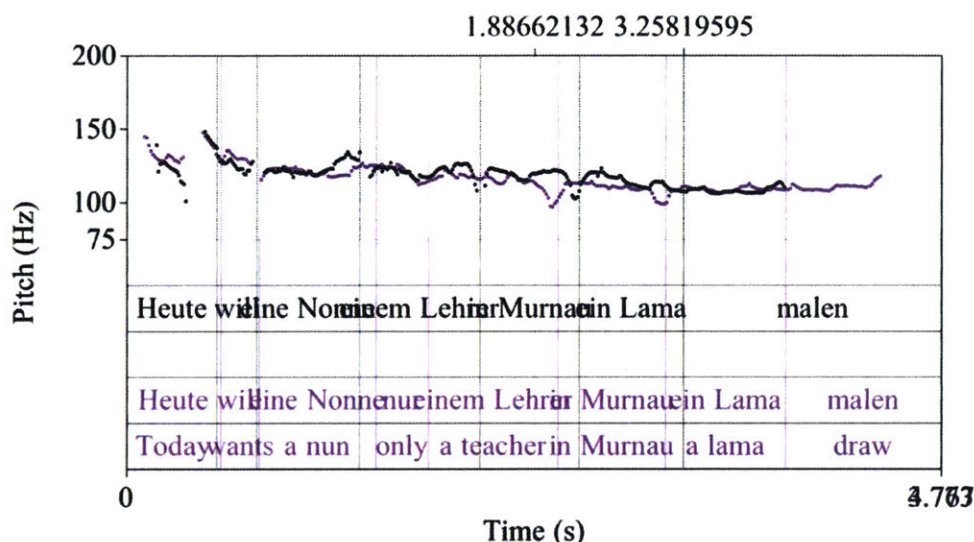Figure 7: Indefinite NP, ditransitive sentence with locative adjunct

Figure 8: Indefinite NP, ditransitive sentence with locative adjunct

If any generalization can be made at all from the data, then the one that the sentences with the negative quantifier *niemand* are generally slightly higher in terms of frequency.[22] Additionally, length might play a role (Norvin Richards, p.c.). However, in the data we obtained, we very clearly cannot see any of the prosodic effects which Branan (2018) reports for the languages he studies, e.g. post focal pitch compression or declination vanishing along the span of Grouping. This does not constitute an argument against the possibility that Grouping has occurred, according to Branan (2018) and Richards (2014). This will be discussed further when I contrast Japanese and German data below.

5.2.3 Outlook

Note that the data above is merely a pilot study in absence of relevant phonology literature as available for languages studied in Branan (2018). Should this project be considered to be of any further value we would have to test these and similar examples in a more controlled setting. We suggest to test at least 6-10 native German speakers, preferably of the same gender (since this presumably minimizes frequency range variation) and dialectal group, though we do not predict that sentence prosody correlates with dialectal variation. The sentences would have to be embedded in short conversations that control for broad focus in the base line sentence, as well as the sentences with

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[22]Christine Bartels, p.c., points out that this might be due to context, inferred by the speaker or otherwise. The sentences with *niemand* are presupposition-defeating denials. Narrow/ contrastive focus effects aside, denials and other "especially engaged" speech acts will result in higher average pitch.

the negative quantifier, and narrow focus for the *nur* sentences. Sentence length should still be varied with transitive and ditransitive sentences. For each sentence length one would have to choose several verbs which are minimally different in terms of frequency of use, and syllables. Syllable length and frequency of use should also be considered for the arguments and adjuncts chosen. Additionally, it might be a good idea to choose these from a lexical set which is somewhat related by content (e.g. jobs, animals) and not outrageously unusual. Again, sonorant words are preferred for F_0 pitch tracking reasons. Test items, once constructed, should be randomly shuffled, ideally with non-related fillers from a different project. An accepted filler:target item ratio from informal gathering in the literature seems to be 3:1. Items should be presented to the participants both visually and via audio, over headphones. Féry & Kügler (2008) suggest to visually present the target sentences with the focused constituent underlined to prevent misinterpretations, though this seems to us to further foster a less natural, too stylized, news-type of intonational contour which might interfere with the results (even more unnatural in addition to the ever-present unnaturalness of the experimental setting environment). Participants should be instructed to read the sentences as naturally as possible in the contexts provided. Ideally, more than one recording per participant should be made of each target item.

Additionally, it would be beneficial to examine if German might have odd prosodic incorporation phenomena in verb-final clauses that may obscure a potential Branan-effect. In that respect we would have to answer the question in what way Japanese and German visibility of prosodic effects might differ and why. I will have to leave all of this for future exploration.

Now that we introduced the individual ingredients that have been claimed to play a role in intervention effects, we will proceed to discuss the anomaly and possible explanations of the examples introduced in (1) in the first part of this paper.

5.3 Contiguity Theory making the right prediction for Japanese

As discussed earlier, according to Branan (2018) in an intervention effect configuration, so-called interveners are blocked from satisfying Contiguity prominence, since they are in a configuration in which the Grouping that would achieve Contiguity prominence is blocked. At issue is any configuration in which two Probes are probing for two Goals with the higher Probe probing for the lower Goal and the reverse, as sketched in (51).

(51) Intervention effect configuration according to Contiguity Theory

```
                           *(
                    _____
                   (           PROBE₁
              _____
             /        PROBE₂
        _____
       /        /    \
    △         △      △
  GOAL₂     GOAL₁    ...
```
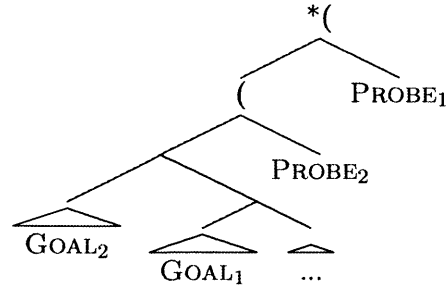
Branan studies this phenomenon for Japanese and concludes that Grouping is restricted in configurations that exhibit both an NPI a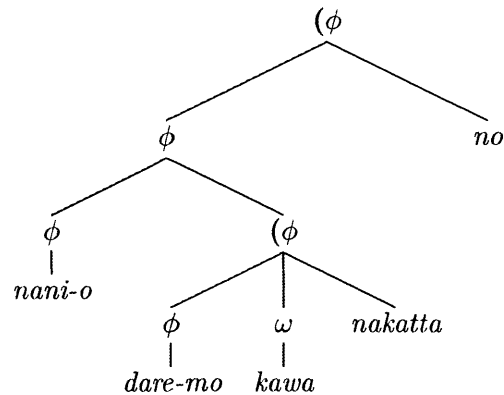nd a *wh*-element. Consider (52). In the scrambled structure in (52c) Contiguity for both *nani-o* and *daremo* is fulfilled; the sentence is grammatical.

(52) a. *John-ga   nani-o   kat-ta-no?*
          John-NOM what-ACC buy-PST-Q
          'What did John buy?'

      b. **Dare-mo nani-o   kawa-nakatta-no?*
          anybody   what-ACC buy-NEG.PAST-Q
          ...

      c. *Nani-o   dare-mo _____ kawa-nakatta-no?*
          what-ACC anybody _____ buy-NEG.PAST-Q
          'What didn't anybody buy?'

```
                    (φ
              _____
             /          \
            φ            no
         _____
        /      \
       φ       (φ
       |      _____
    nani-o   /   |   \
            φ    ω   nakatta
            |    |
         dare-mo kawa
```

In the ungrammatical sentence in (52b) Contiguity would be satisfied for *dare-mo* and negation *nakatta* in (52b) as evident in (53).

(53)

$$*\phi$$

Tree:
```
              *φ
             /  \
           (φ    no
          / |  \
         φ  φ   nakatta
         |  / \
   dare-mo φ   ω
          |    |
       nani-o kawa
```
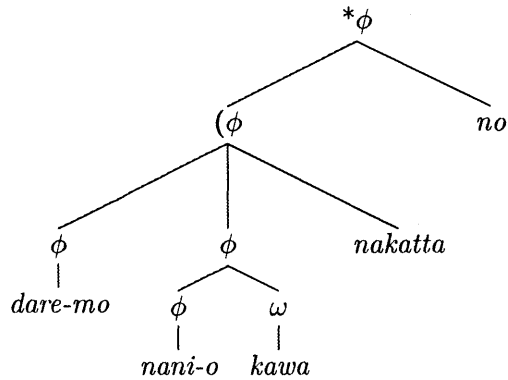
However, in order to satisfy Contiguity for *nani-o* with C *no*, Grouping needs to apply, which destroys the Contiguity domain for *dare-mo* and negation (cf. (54)). This is forbidden, even though the Grouping operation in fact establishes a new Contiguity relation by creating a new node in which *dare-mo* and negation are Contiguous. Apparently, the original Contiguity relation must be preserved during the derivation or else ungrammaticality occurs.

(54)

$$*\phi$$

Tree:
```
              *φ
             /  \
           φ    (φ
           |    / \
      dare-mo  φ   no
              / \
             φ   nakatta
            / \
           φ   ω
           |   |
        nani-o kawa
```
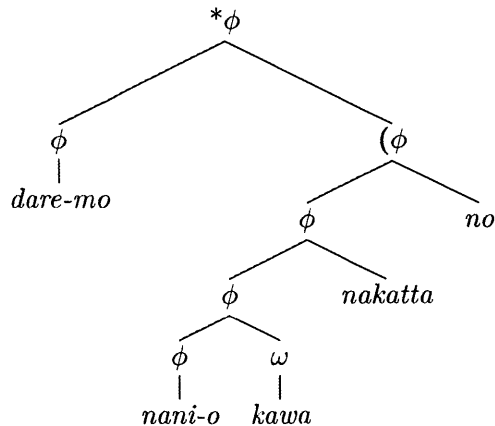
Branan captures this restriction on Grouping in (55) below.

(55) *Contiguity Preservation* (cf. Branan 2018: 315)

    a. A Contiguity Domain D for a Probe-Goal pair <P,G> must be preserved in every spellout domain that contains both P and G,
i.e. the Probe and the Goal must form a constituent, and the Goal must be in a position of prominence within that constituent.

    b. Contiguity Domain: A Contiguity Domain D is a phonological phrase in which G satisfies Contiguity for P in D, and D immediately dominates either P or G.

c. A domain D is preserved iff ∃ a Contiguity domain D' that has the same immediate dominance relationships between P and G.

Then, as a last resort to satisfy Contiguity for both *dare-mo* and *nani-o*, overt movement of *nani-o* needs to apply, since Grouping to satisfy Contiguity is blocked. We arrive at the grammatical (52c). Crucially, according to Branan (2018), Japanese realizes Contiguity-prominence by 'post focal pitch compression', i.e. overt domain marking, as a hallmark of Grouping. Then, once a relation of relative Contiguity-prominence has been determined, it cannot be changed later, as evident by the ungrammatical (52b).[23]

5.4 Adjustments for German core data

5.4.1 Contiguity Theory for focus-sensitive particles and negative quantifiers

While Richards (2010, 2014) and Branan (2018) look at C Agreement with a *wh*-phrase here, we will first look at Probe-Goal configurations in right-headed, left-active phrases with focus-sensitive particles and negative quantifiers - configurations for which we predict similar effects. These are the most minimal German example with which to test Probe-Goal relations in terms of Contiguity Theory, since in a language with overt *wh*-movement, like German, relevant examples are necessarily more complex than in Japanese and Korean, because it is harder to successfully place a *wh*-phrase in situ. For German as a mixed-headedness language we predict that Grouping is unavailable for a configuration in which both a FocP introduced by a focus-sensitive element with ~ c-commands the structure needed for a negative quantifier, with the negative quantifier c-commanding the focused element. Such a configuration is indeed reported in Beck (2006) and provided in (56).

(56) a. *??...*, *weil   niemand   (nur) für Otto*$_F$ *einen Finger gerührt hat.*
   ...   because nobody-NOM only   for Otto a-ACC finger   moved has
   intended: '... because nobody lifted a finger for Otto only.'

   (Beck 2006: 39, (103a.))

   b. *..., weil   niemand   für Otto einen Finger gerührt hat.*
   ... because nobody-NOM for Otto a-ACC finger   moved has
   '... because nobody lifted a finger for Otto.'   (Beck 2006: 39, (102))

   c. *..., weil   (nur) für Otto*$_F$ *niemand einen Finger gerührt hat.*
   ... because only   for Otto nobody   a-ACC finger   moved has
   '... because nobody lifted a finger for Otto only.'   (Beck 2006: 39, (103b.))

   d. ^{M} *..., weil   für Otto niemand   einen Finger gerührt hat.*
   ... because for Otto nobody-NOM a-ACC finger   moved has
   '... because nobody lifted a finger for Otto.'

---

[23] Norvin Richards (p.c.)

Note however, that the strong NPI *einen Finger rühren* 'lift a finger' is crucial in this example. Compare (58) below, repeated from the initial examples in (2c) and (2d) above, in which the order of the arguments does not seem to change general acceptability, though is important for information structural reasons.[24]

(58) a. ..., *weil   niemand   nur für Otto gekocht hat.*
          ... because nobody-NOM only for Otto cooked has
          '... because nobody cooked only for Otto.'

      b. *M..., weil   nur für Otto niemand   gekocht hat.*
          ... because only for Otto nobody-NOM cooked has
          '... because nobody cooked only for Otto.'

I conjecture that the examples from Beck with a strong NPI produce a type of intervention effects about which I do not have to say anything at this point. The interested reader is referred to Merin (1994) and references therein. Instead, I will take a look at the examples in (58) through the lens of Contiguity theory. I will argue that just as with Branan's analogous Japanese example, we do not get intervention effects here for structural reasons.

Recall that a Contiguity-theoretic analysis à la Branan 2018 would make use of the fact that Grouping is restricted. Consider the syntactic structure for (58a) in (59).[25]

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[24]I am reporting my own judgments here which are consistent with Martin Hackl's judgments on similar, slightly more natural examples. Note that these seem to exhibit scope effects that I will not discuss.

(57) a. ..., *weil   nur für mich   niemand   eingesprungen ist.*
          ... because only for me-ACC nobody-NOM step_in   is
          '... because I was the only person for whom nobody stepped in.'

      b. ..., *weil   niemand   nur für mich   eingesprungen ist.*
          ... because nobody-NOM only for me-ACC step_in   is
          '... because nobody stepped in just for me.'

   Also note that these judgments seem to be subject to interspeaker variation with regard to requiring an overt focus-sensitive item, associating with an F-marked constituent.

[25]I am assuming with Büring & Hartmann (2001) (also suggested earlier in Jacobs 1983) that the focus sensitive particle *nur* 'only' attaches to verbal projections and clausal nodes, even in the case of apparent DP adjunction (cf. Beck 2006: 14, fn 7), i.e. [only C [~C [John$_{F_1}$ left]]], with C context set. The syntactic details of the ~ complex and the context set C, to my knowledge, have not been fully agreed upon in the semantic-syntactic interface literature on Focus Phrases.

(59) Syntactic structure

```
                          CP
                 ╱─────────────╲
                C               FocP
              weil      ╱─────────────╲
                    (nur) C           Foc′
                              ╱─────────────╲
                           AuxP              ∼ C
                            │
                           Aux′
                      ╱──────────╲
                   NegP           Aux
                    │             hat
                  Neg′
              ╱────────╲
            vP          Neg
        ╱──────╲        ¬Op
      QP        v′
    niemand   ╱────╲
            VP      v
         ╱──────╲
       PP        VP
     für OttoF₁  gekocht
```
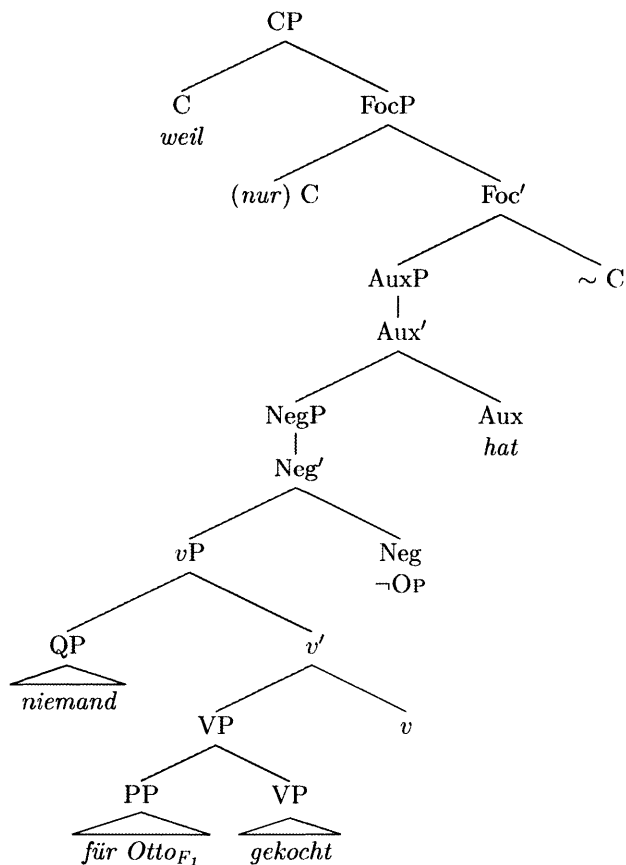
Contiguity would then be satisfied for *niemand* in the lower part of the prosodic structure, as ϕ_{NegP} encompasses both ¬Op and *niemand* and *niemand* is Contiguous in ϕ_{NegP}. This is illustrated in (60).

(60) Lower prosodic structure of (58a)

```
                    (φ_NegP
              ╱─────────────╲
          (φ_vP             ω_Neg
        ╱──────╲            ¬Op
     (φ_QP      (φ_VP
    niemand   ╱──────╲
          (φ_PP      (φ_VP
        für OttoF₁   gekocht
```
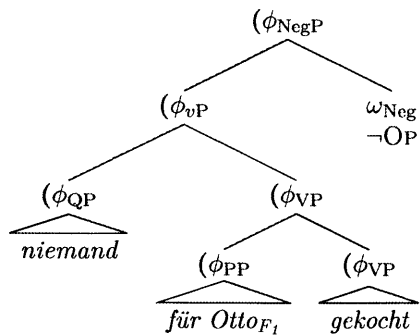
Once we Merge $\sim$ *für Otto* cannot satisfy Contiguity, since ϕ_{QP} is blocking it from being Contiguous in ϕ_{FocP}; cf. (61).

(61)   Adding the upper part of the prosodic structure of (58a)
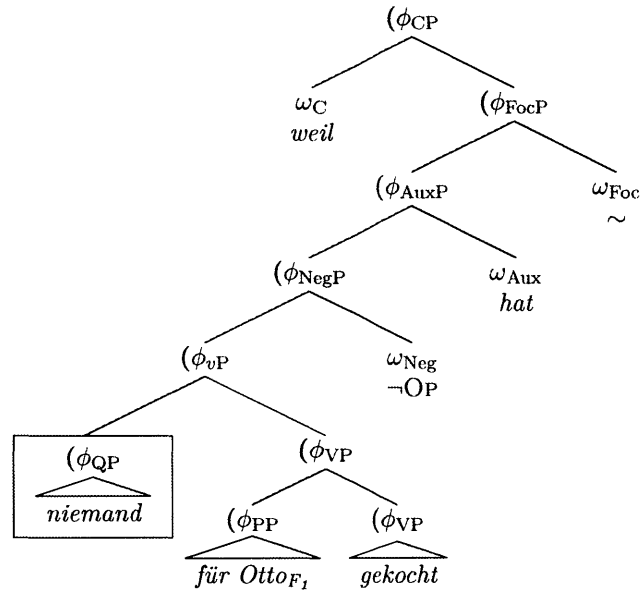
In order to satisfy Contiguity for $\phi_{\text{für Otto}_{F_1}}$ with $\sim$, Grouping needs to apply. But this then destroys the Contiguity domain for *niemand* and $\neg\text{OP}$, as evident in (62).[26]

---

(62)

$(\phi_{CP}$

ω_C $(\phi_{???}$
weil

$(\phi_{QP}$ $(\phi_{FocP}$
niemand

$(\phi_{AuxP}$ ω_{Foc}
  $\sim$

$(\phi_{NegP}$ ω_{Aux}
hat

$(\phi_{vP}$ ω_{Neg}
  $\neg OP$

$(\phi_{VP}$

$(\phi_{PP}$ $(\phi_{VP}$
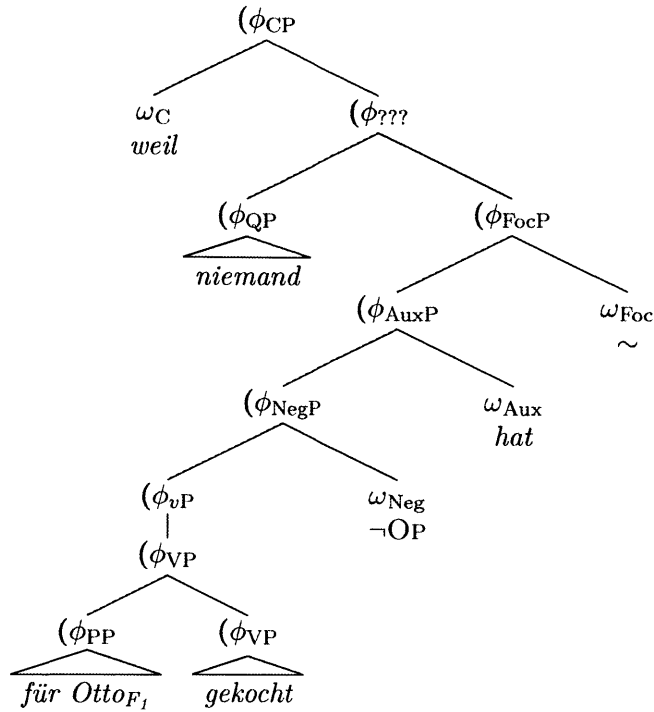*für Otto$_{F_1}$*   *gekocht*

In contrast to the Japanese example involving negation and a *wh*-element (cf. Branan 2018: 203ff.), we see that in German - a prosodically left-active language with syntactic heads below C on the right - when there are two phrases that enter into Agree relationships with two separate heads, Grouping can be used to place the lower phrase into a position of Contiguity prominence if it is in an Agree relationship with the higher of the two heads. Grouping (still) breaks the Contiguity relationship between the higher phrase and the lower head; but at the same time, crucially, it establishes a *new* Contiguity relationship. This seems to suffice for the example in (58a) to be judged grammatical in a configuration that is structurally similar to the critical Japanese example reported upon in (52b) above. Branan would attribute this difference in grammaticality to the fact that German *niemand* and *nur* do not have span marking, unlike their Japanese counterparts. In particular, Branan would claim that this lack of span marking indicates that *niemand* and *nur* in German do not undergo Grouping at all, maybe because unlike their Japanese counterparts, they do not enter into Agree relations with heads in the clausal spine. However, since we have already seen that *niemand* and *nur* do indeed participate in intervention effects with *wh*-in-situ I will not merely be adopting Branan's approach here. I will, instead, take his observation that a derivation which first establishes and then breaks one and the same Contiguity relationship is impossible just if there is span marking in the language. Grouping invariably happens during any derivation that contains the critical lexical items, regardless of whether span marking

takes place, creating a structure that obeys Contiguity in the end.[27]

In the following I will turn to intervention effects in configurations with *wh*-phrases and focused as well as negative elements. I will show that in such configurations, in contrast, Contiguity relations will necessarily be destroyed via Grouping in order to make the lower of the multiple *wh*-phrase(s) interpretable - but this time, no new Contiguity relationship can be established. I will claim that this effect is at the root of what is reported as unacceptability in the literature.

5.4.2 Contiguity Theory for multiple *wh*-questions

One of the best-described languages in the literature on the syntax of multiple *wh*-questions is Bulgarian, a left-headed language which overtly moves all of its *wh*-phrases by "tucking in" each instance of *wh*-movement in a specifier below all existing specifiers (cf. Rudin 1988, Bošković 1997, 1999, Richards 1997, 2001 and others).[28] Bulgarian shows superiority effects for so-called non-D linked multiple *wh*-questions. In such questions, the *wh*-phrases are strictly ordered; they appear in the same order in the specifiers of CPs in which they have been base-generated. This is illustrated in (63).

(63)   a. *Koj₁ kogo₂ t₁ vižda t₂?*
            who whom   sees
            'Who sees whom?'

        b. **Kogo₂ koj₁ t₁ vižda t₂?*
            whom   who   sees
            intended: 'Who sees whom?'

The standard account of this is that Bulgarian has a special kind of C_{WH} which allows multiple specifiers while also allowing for non-deletion of its uninterpretable features, thus being able to attract more than one *wh*.

Under a Contiguity Theory account, multiple *wh*-movement in Bulgarian will have to be explained by stipulating that the syntactic phrase CP has two prosodically active edges and if necessary undergoes several Grouping operations, depending on how many *wh*-elements occur. Technically, this is possible by assuming that CP is mapped both to an intonational phrase ι_{CP} as well as to a prosodic phrase ϕ_{CP}. These phonological

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[27]Kenyon Branan's more current work has been dedicated to a more in-depth understanding of the nature of span marking, hypothesizing that span marking must not only mark a Contiguity domain, but must mark a Contiguity domain which is the minimal string containing the Probe and the Goal (Norvin Richards, p.c.). Under this newer approach, intervention effect configurations are problematic in that at the end of the derivation one of the span-marked domains is larger than it should be. I will leave the details for further research.

[28]The notion of tucking-in follows from Agree with Closest and an additional principle such as Shortest Move (Chomsky 1995).

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domains, crucially, have distinct prosodically active edges.[29] Under these assumptions, overt multiple wh-movement in Bulgarian is analyzed as two wh each fulfilling the Contiguity requirement with the CP phrase by Grouping. The approach is illustrated in (64) below: wh_2 is Contiguous within ϕ_{CP}, while wh_1 is Contiguous within ι_{CP}. We will assume this approach for German multiple wh-questions in the following, conjecturing that in order to fulfill Contiguity for each in-situ wh-element Grouping applies once to place the wh-phrase into a position of prominence within a right-prominent ι-phrase.

---

[29]Norvin Richards (p.c.) assumes that prosodic phrases begin as ϕs and only change into ι once certain selectable features have been checked off. As Kügler & Féry (2017: 284) report, it has been proposed by numerous authors (von Stechow & Uhmann 1986, Truckenbrodt 1995 and Féry 2013 that focus (nuclear pitch accent) in German tends to be aligned with the right-hand edge of the intonation phrase. If so, that would strengthen the case for my suggested account of multiple wh-questions. Note however, that it seems difficult to distinguish prosodic contours for left-active ϕ and right-active ι phrases, given that ι phrases are the PF mappings of the syntactic clause: prosodic right-activeness in Richards' sense and prosodic phrasing reflecting syntactic phrasing could be at odds with one another.

(64) Multiple *wh*-movement under Contiguity Theory, Bulgarian

$$
\begin{array}{c}
??? \\
\diagup\,\diagdown \\
(\iota\text{CP} \qquad \phi\text{IP}) \\
\phi\text{CP}) \qquad \overgroup{\quad} \\
\diagup\,\diagdown \qquad \cdots \\
wh_1 \quad \diagup\,\diagdown \\
\omega\text{C} \quad wh_2
\end{array}
$$
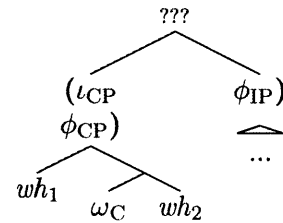
Let us now take a look at a sentence such as (65), which has a proper name, *die Luise*, in subject position, while also containing two *wh*-phrases, *wen* 'who(m)' and *wo* 'where'.

(65)   *Wen   hat die   Luise wo   ertappt?*
       who-ACC has the-NOM Luise where caught
       'Where did Luise catch who(m)?'

This sentence exhibits, instead of subject movement, movement of *wen* to specCP (possibly via specvP) to fulfill the requirement that the V1 position is filled, while at the same time fulfilling Contiguity. Obligatory *wh*-movement is a general property of languages with V2, attributed to Richards (2014)'s principle of Multitasking in (66); if V2 is triggered by an affixal C, then the interrogative version of this affixal C is compelled to satisfy its need for Affix Support with the *wh*-phrase with which it Agrees. We also encounter the familiar V-to-C movement mentioned in Section 4.2 above.

(66)   *Principle of Multitasking* (Richards 2014: 59, (48))[30]
       At every step in a derivation, if two operations A and B are possible, and the
       conditions satisfied by A are a superset of those satisfied by B, the grammar
       prefers A.

In light of our approach to *wh*-movement in multiple *wh*-questions, the syntactic tree assumed for (65) is the one given in (67a). Its prosodic counterpart is given in (67b) where both *wen* and *wo* are Contiguous after Grouping.

---

[30]For similar economy conditions see Pesetsky & Torrego 2001 and Kotek 2014.

(67) a. Syntactic tree for (65)

```
                    CP
              ┌──────┴──────┐
            DP₂            C'
             △        ┌────┴────┐
            wen       C⁰       AuxP
                     hat₁       │
                               Aux'
                          ┌─────┴─────┐
                         vP          t₁
                     ┌────┴────┐
                     ∃        vP
                          ┌────┴────┐
                         DP        v'
                          △    ┌────┴────┐
                       die Luise VP      v⁰
                             ┌───┴───┐  tappt
                            t₂      V'
                                ┌───┴───┐
                               VP      V⁰
                             ┌──┴──┐
                            DP   V⁰
                             △   er-
                            wo
```
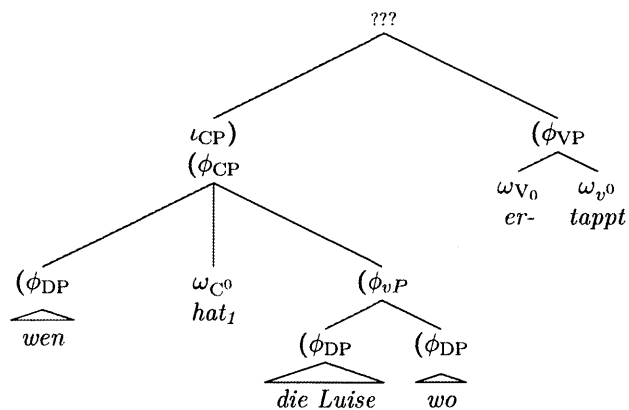
b. Prosodic tree for (65)

```
                      ???
              ┌────────┴────────┐
            ιCP)              (φVP
            (φCP          ┌─────┴─────┐
       ┌─────┼─────┐     ωV₀        ωᵥ⁰
     (φDP   ωC⁰   (φᵥP   er-        tappt
      △    hat₁  ┌──┴──┐
     wen        (φDP  (φDP
                  △     △
              die Luise  wo
```
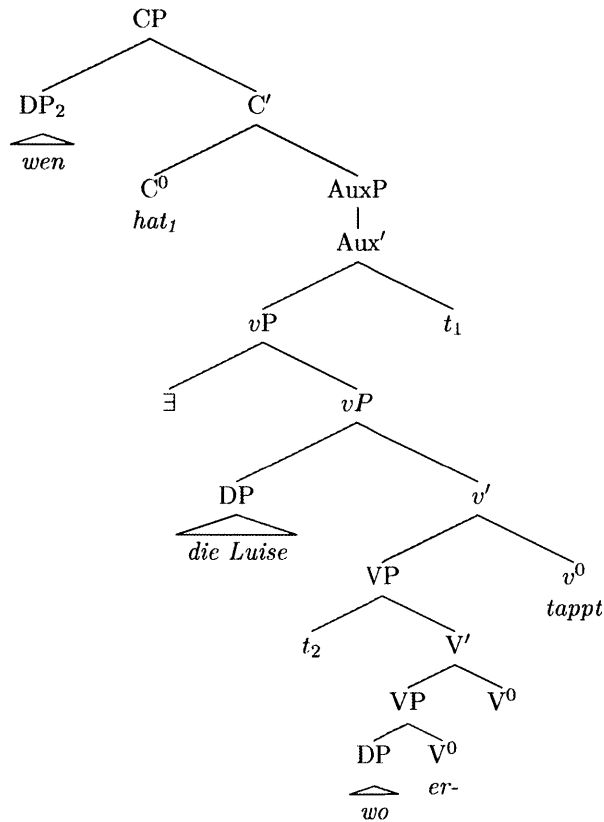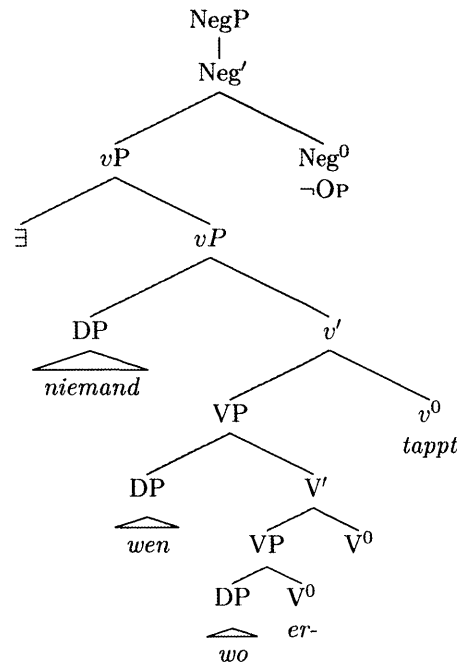
Now compare this to the uninterpretable question in (68a), which involves two *wh*-elements and the negative quantifier *niemand* 'no-one'. After Merging of the Neg head with ¬OP, the question has the lower syntactic tree in (68b) and the corresponding prosodic tree in (68c). ¬OP has been independently put forward as licensor for negative

indefinites by Penka 2011.[31] Under the assumption that German is prosodically left-active, *niemand* is Contiguous within ϕ_{NegP}.

(68) a. *#Wen   hat niemand   wo   ertappt?*
         who$_{ACC}$ has nobody$_{NOM}$ where caught

         intended: 'Tell me the person-place pairs (x,y) such that nobody caught x at y.'
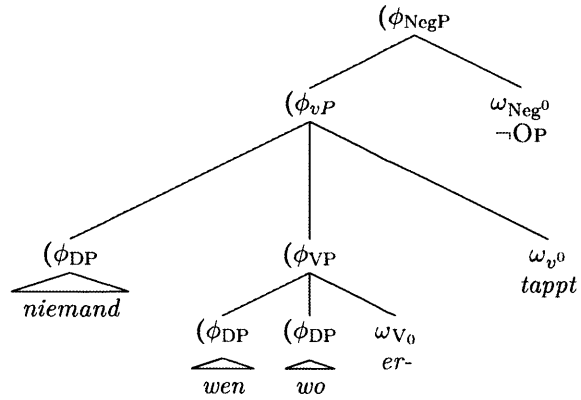
      b. Syntactic tree after Merging ¬O$_P$

```
                    NegP
                      |
                    Neg′
                   ╱      ╲
                 vP        Neg⁰
               ╱    ╲       ¬O_P
              ∃      vP
                    ╱   ╲
                  DP      v′
                 ⟨niemand⟩  ╱    ╲
                          VP      v⁰
                         ╱  ╲    tappt
                       DP    V′
                      ⟨wen⟩ ╱   ╲
                           VP    V⁰
                          ╱ ╲
                        DP   V⁰
                       ⟨wo⟩  er-
```

---

[31]LICENSING CONDITION FOR NIS IN GERMAN (Penka 2011: 109):

NIs have to be adjacent to an abstract negation ¬Op in the surface syntax. Penka is commenting that given that traces do not constitute interveners but only phonologically realized material one might be inclined to conclude that the adjacency is a PF-condition: "But I do not see how the licensing relation could be formulated at the level of PF, given that the licenser itself is phonologically empty and hence not visible at PF". This is indeed a problem for an extension of Branan (2018) to languages where, unlike in Japanese, Q and negation are covert. I have nothing to contribute to this issue at present; the problem of key elements being silent in more languages than not may extent to Contiguity Theory more generally.
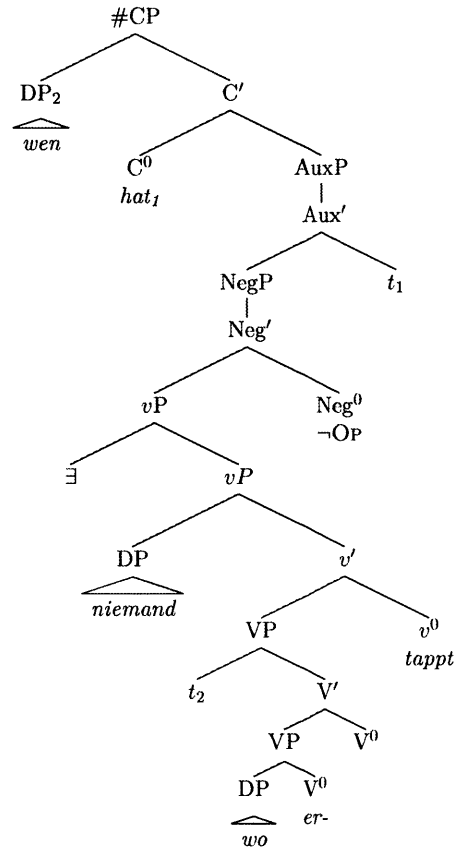
c. Prosodic tree after Merging $\neg$OP: *niemand* is Contiguous[32]

$(\phi_{\text{NegP}}$

$(\phi_{vP}$ ω_{Neg^0}
            $\neg$OP

$(\phi_{\text{DP}}$ $(\phi_{\text{VP}}$ ω_{v^0}
 niemand   *tappt*

         $(\phi_{\text{DP}}$ $(\phi_{\text{DP}}$ ω_{V_0}
                        er-
          wen   *wo*

Once the C head is Merged, *wen*, being the closest *wh*-element to C, moves to specCP to fulfill V1 requirements (cf. (69a)). As such, it also fulfills Contiguity within ϕ_{CP}. By contrast, *wo* is not Contiguous, since the verb and $\neg$OP block right adjacency within ι_{CP}, as illustrated in (69b).
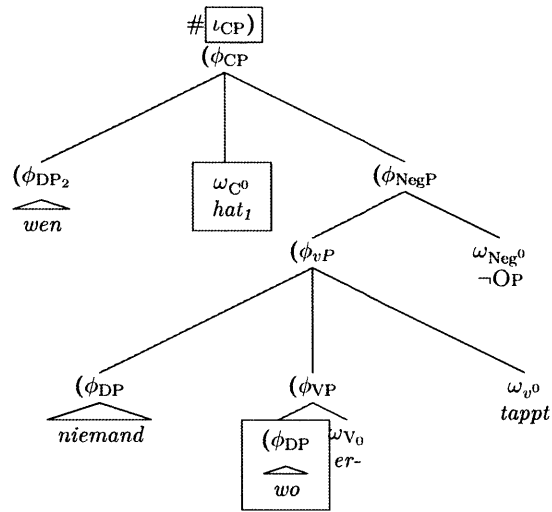
---

[32]For now, I will assume that syntactic traces do not get mapped onto a prosodic node and will leave open the question about the exact syntax of the verbal complex.

(69) a. Syntactic tree after Merging C

```
                    #CP
            ┌────────┴────────┐
          DP₂               C′
          ‿‿          ┌──────┴──────┐
          wen         C⁰           AuxP
                     hat₁           │
                                   Aux′
                            ┌───────┴───────┐
                          NegP             t₁
                            │
                          Neg′
                    ┌───────┴───────┐
                   vP             Neg⁰
              ┌─────┴─────┐        ¬OP
              ∃          vP
                   ┌──────┴──────┐
                  DP            v′
                  ‿‿      ┌──────┴──────┐
                niemand   VP           v⁰
                     ┌─────┴─────┐     tappt
                    t₂          V′
                          ┌──────┴──────┐
                         VP            V⁰
                     ┌────┴────┐
                    DP        V⁰
                    ‿‿        er-
                    wo
```

b. Prosodic tree after Merging C: *niemand* and *wen* are Contiguous, *wo* is not Contiguous[33]

---

[33]Note that I assume that Grouping keeps the linear order of all elements, including covert ones.

#[ιCP)]
(φCP

(φDP₂   ωC⁰   (φNegP
 wen   hat₁

(φvP   ωNeg⁰
                   ¬OP

(φDP   (φVP   ωv⁰
niemand   tappt

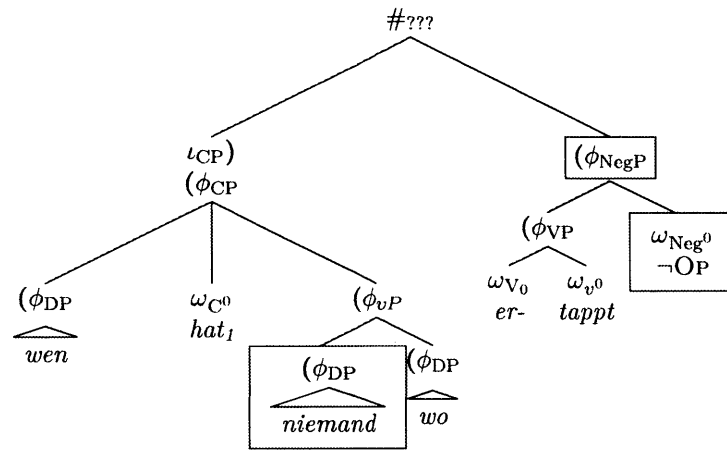   (φDP ωV₀
          wo   er-

After (hypothetical) Grouping (cf. (70)) the prosodic tree fulfills Contiguity for *wo*, but the Grouping process has broken *niemand*'s original Contiguity relationship at ϕ_{NegP}.[34] In contrast to the Japanese example in (52b) above, however, Grouping has not - in fact, couldn't have - established a new prosodic node that would render the two Probe-Goal relationships for *niemand* and *wo* Contiguous within the same prosodic tree. As a consequence, we observe intervention.

(70) Prosodic tree after Grouping to fulfill Contiguity for *wo*: *niemand* is not Contiguous anymore[35]

---

[34]Note that, given that Match Theory doesn't keep track of the phrase level categories once shipped off to PF, it is not entirely clear how the breaking of the original Contiguity relationship could be tracked. The system seems to need a memory of what happened when and where, at least in terms of relationships between nodes, which it does not have, as described in the prosodic literature I am familiar with. The curious reader is referred to recent prosodic literature by Selkirk and references therein.

[35]Note that I am unclear about the exact mapping of *v*P. Essentially, in the right branch of the prosodic tree the verbal cluster *ertappt* 'caught' now is within ϕ_{VP}. If we assume that the prefix *er-* head-moves from V to *v* we would double *v*P. I leave the details for further investigation.

$\#???$

$\iota_{CP})$
$(\phi_{CP}$

$(\phi_{DP}$ ω_{C^0} $(\phi_{vP}$

wen   *hat$_I$*

$(\phi_{DP}$ $(\phi_{DP}$

niemand   *wo*

$(\phi_{NegP}$

$(\phi_{VP}$ ω_{Neg^0}
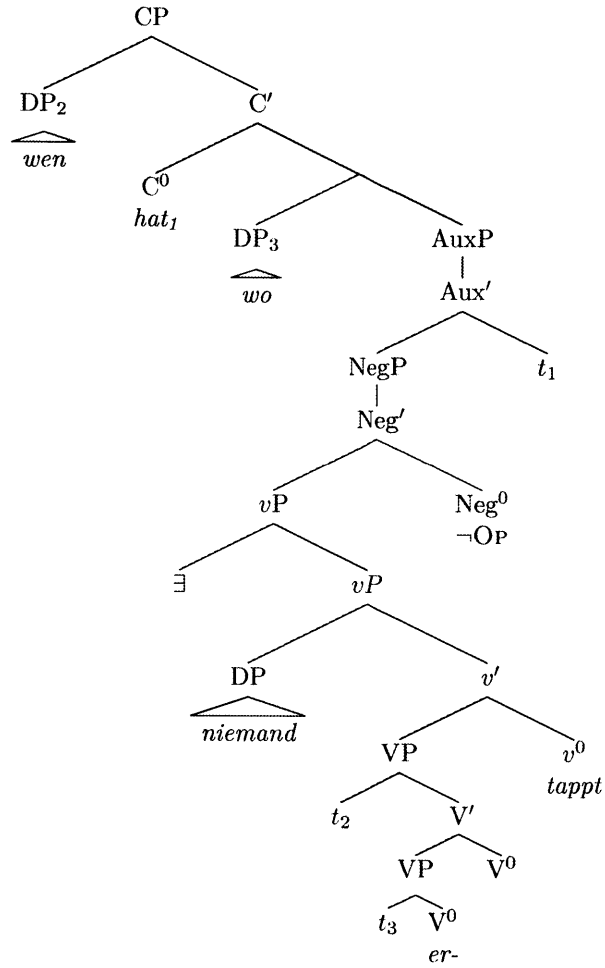$\neg OP$

ω_{V_0} ω_{v^0}

er-   *tappt*

Overt syntactic movement of *wo*, resulting in the grammatical sentence in (71a) below, saves the day, since it permits Grouping of the full ϕ_{NegP} constituent in the prosodic structure. This is illustrated in (71b)[36] and (71c) on the next pages.
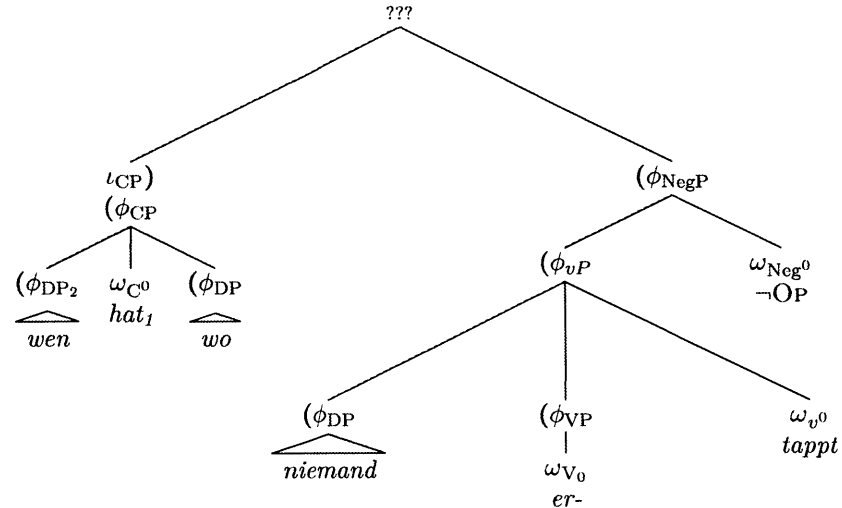
(71)   a.   *Wen*   *hat wo*   *niemand*   *ertappt?*
         who-ACC has where nobody-NOM caught

         'Tell me the person-place pairs (x,y) such that nobody caught x at y.'

---

[36]Leaving aside any details of the exact position that *wo* is scrambled into.

b. Syntactic tree after Merging C and movement of both *wen* and *wo*

CP
├─ DP₂
│   *wen*
└─ C'
   ├─ C⁰
   │   *hat₁*
   └─ DP₃
      │   *wo*
      AuxP
      │
      Aux'
      ├─ NegP
      │ │
      │ Neg'
      │ ├─ vP
      │ │ ├─ ∃
      │ │ └─ vP
      │ │   ├─ DP
      │ │   │   *niemand*
      │ │   └─ v'
      │ │   ├─ VP
      │ │   │ ├─ t₂
      │ │   │ └─ V'
      │ │   │   ├─ VP
      │ │   │   │ ├─ t₃
      │ │   │   │ └─ V⁰
      │ │   │   │   *er-*
      │ │   │   └─ V⁰
      │ │   └─ v⁰
      │ │   *tappt*
      │ └─ Neg⁰
      │   ¬Oₚ
      └─ t₁

57

c. Prosodic tree after Merging C and Grouping: *wen*, *wo* and *niemand* are Contiguous in their respective subtrees

$$
\begin{array}{c}
??? \\
\end{array}
$$

(ι_{CP})
$(\phi_{CP}$

$(\phi_{DP_2} \quad \omega_{C^0} \quad (\phi_{DP}$
　　wen 　*hat_1* 　*wo*

$(\phi_{NegP}$

$(\phi_{vP} \qquad \omega_{Neg^0}$
　　　　　　　$\neg OP$

$(\phi_{DP} \qquad (\phi_{VP} \qquad \omega_{v^0}$
　　niemand 　　| 　　*tappt*
　　　　　　ω_{V_0}
　　　　　　er-

As we see, here too a failed Grouping attempt accounts for the unacceptability of the sentence, making use of the same mechanism, well attested elsewhere, of Probe-Goal Agreement requirements for all focus-sensitive particles, negative quantifiers, and *wh*-elements. In contrast to the Japanese examples reported on above (cf. (52b)), Grouping here destroys the Contiguity domain for *niemand* while not creating a new one. A prosodic effect, which Branan attributes to Grouping of intervening elements in the languages he studies is not associated with the procedure in German, suggesting that Grouping - at least in German - is independent of span marking.

In sum: so far, Contiguity Theory fares better with regard to our limited German examples than the Alternative Semantics account proposed previously. However, in the absence of clear-cut empirical prosodic evidence for the Grouping operation the Contiguity account cannot be conclusively adopted.

5.4.3 Possible extensions

In this section I would like to offer some additional data that any comprehensive account of intervention effects in German ought to cover. One such set of data are configurations with multiple foci. Consider (72), modeled after the example in (73) by S. Beck for which I couldn't track down the original reference.

(72) Context: *There is a birthday party at which there are different kinds of cake: chocolate, strawberry and lemon. John tried chocolate, Mary, Sally and Ben tried strawberry, Mary and Sally tried lemon as well.*

A: Welchen Kuchen hat nur John probiert? B: Nur John hat nur
A which cake has only John tried B only John has only
Schokoladenkuchen probiert.
chocolate_cake tried
'Only John tried nothing but chocolate cake.'

(73) Context: *Peter, Mary, John, Mr. X and Mr. Y are all spies. In the spy community it is crucial that personal contact between spies is restricted. This is the setting for the discourse below.*
Mr. X: *You only told THE SUPERVISOR that Mary met Peter.*
Mr. Y: *Right. I also only told the supervisor that Mary met JOHN.*
Mr. X: *You only told THE SUPERVISOR that Peter met John.*
Mr. Y: *Right. I also only told the supervisor that MARY met John.*

Both examples are claimed to have a focus configuration as in (74) below. The super-scripts in $\sim$ are not an indication for selectivity but indicate which particle associates with which focused constituent for the intended interpretation.

(74) $[\sim^1 [\sim^2 [F_1 \ F_2]]]$

On Beck's Alternative Semantics account, the configuration in (74) is predicted to be un-grammatical, since focus evaluation cannot skip an intervening $\sim$-operator. Concretely, the innermost $\sim$-operator under *only* already evaluates the focus on both NPs in the examples above, leaving nothing for the outermost $\sim$ to associate with. The derivation should crash (cf. Beck 2006: 18). For Branan, this configuration is equally predicted to be ungrammatical, given that Contiguity is evaluated incrementally and only one NP can be Contiguous with respect to one operator at any given time if the ϕ has only one prosodically active edge and the Probe is Agreeing with the first suitable Goal it encounters. This would make the first constituent Contiguous with the inner operator but leaves the second constituent non-Contiguous, unless Grouping occurs - but Grouping would then destroy the Contiguity relation established beforehand (not to speak of the fact that the interpretation would in fact be nonsensical, unless the $\sim$s in this approach would be made selective, a move which is possible under Branan but impossible under Beck's story).

The picture gets even more complicated if we have a look at (75), first reported on by von Fintel (1994: 49, fn. 44)[37] and cited in Beck (2006). When the order of *only* and *also* (acceptable under this linear order) is reversed, the relevant reading is impossible. This is not what we expect either, under either Beck or Branan.

---

[37]Note that I couldn't reproduce the effect since B3 has been judged uninterpretable in this context by native speakers I consulted.

(75) A: I know that John drank water at the party. What else did he drink?
    B1: Besides water he only drank [CARrot juice]$_F$.
    B2: #He only also drank [CARrot juice]$_F$.
    B3: He also only drank [CARot juice]$_F$.

In contrast to the multiple foci constructions, Beck's theory, given the split between selective Q and unselective $\sim$ predicts that constructions with the configuration in (76) are grammatical. This is indeed the case, as evident from (77).

(76)   [$\sim$ wh F]

(77)   *Luise   hat sich nur gewundert, wen   Noah$_F$ getroffen hat.*
      Luise$_{NOM}$ has self only wondered who-ACC Noah met   has
      'Luise only wondered who Noah met.'

Branan also predicts this pattern to be good, since, although the higher of the Probes Agrees with the lower of the Goals, this relationship is established across a clause boundary. Contiguity can be reached for *wen* and its Probe, but in order to reach Contiguity for focused *Noah* with $\sim$, Grouping needs to apply. The operation severs a Contiguity relationship when the trigger of Grouping is not in the same phase as that Contiguity relationship (cf. Branan 2018: 218ff.) This is so, because Contiguity need hold only at the phase level as evident from CP-clause 'extraposition' structures such as in (78) below.

(78)   *Ich habe nur gesagt, dass der   Peter die   Luise$_F$ vorgestellt hat.*
      I   have only said   that the-NOM Peter the-ACC Luise   introduced has
      'I only said that Peter introduced Luise (and no-one else).'

An additional example in the same spirit has been cited by Beck 2006 (p.32, (92a., b.) and is reported in (79).

(79)   a. *??Wen   hat LUISE wo   gesehen*
        who-ACC has Luise   where seen
        intended: 'Where did LUISE see who?'
    b. *Ich habe mich (nur) gefragt, wen   LUISE wo   gesehen hat.*
        I   have myself (only) asked who-ACC Luise   where seen   has
        'I (only) wondered where LUISE saw who.'

Beck anticipates Branan's analysis to a certain extent by conjecturing that in the (a.) example there is no obvious adjunction site for the ~-operator outside the scope for Q, while adjunction inside the scope of Q leads to the intervention effect. In the (b.) example, however, focus is evaluated outside the scope of the embedded Q and the adjunction site needed for Grouping is already part of the overall structure. Beck then concludes that it is not focus that intervenes, but evaluation of focus. This is in effect what is at stake for Branan (2018) as well. In the matrix clause, Grouping to satisfy Contiguity for *wo* destroys the formerly established Contiguity in the same phase for *Luise*. In the embedded clause, the trigger of Grouping is in a different phase, thus no ungrammaticality is observed.

6 Conclusion and outlook

This paper makes two contributions to advancements in the intervention effect community: first on a Contiguity-theoretic and second on a meta-theoretic level.

First, this paper argues that German differs crucially from the languages explored by Branan's (2018) crosslinguistic study. Japanese, Korean, and Mongolian, being syntactically right-headed, prosodically left-active languages, first destroy but then reestablish a Contiguous Probe-Goal relationship in the course of the derivation of the familiar intervention effect examples. German, a prosodically left-active but syntactically mixed-headed language, in contrast, only exhibits intervention effects if Contiguity relationships in multiple *wh*-questions are terminally destroyed. Configurations in which Contiguity relationships are destroyed and then reestablished are well-formed in German, given that German lacks span marking.

Second, the paper adds to the comparison of Alternative Semantics and Contiguity Theory qua intervention effects. For Beck, the relevant level for any intervention configuration described is Logical Form (LF), the input to semantic interpretation. She assumes for both (negative) quantifiers and focus-sensitive items that, given that they operate on alternatives, they introduce a covert alternative evaluating operator, ~, "without any apparent semantic necessity for this (i.e., there is no association with focus)" (Beck 2006: 51). For Branan, the relevant level for any intervention configuration is prosodic structure. Both accounts struggle to cover particular data. We may wonder whether a universal account is truly achievable and even desirable. Concretely, are negative quantifiers and focus sensitive items really the same kind of beasts? In this spirit, Itai Bassi (p.c.) reports the contrast in (80) below between *only* and *nobody* for the reconstruction of pronominal binding in English.[38] In (80a) *her* in the moved *wh*-phrase may readily refer to *Irene*. It appears thus that the phrase contains material that behaves with respect to pronominal binding as if it was in a position lower than that in which it is pronounced, given that the pronoun *her* can only be bound by the referential expression

---

[38] I was not able to reproduce this contrast consistently in informal elicitations but agree that it is worthwhile testing for it more formally.

Irene. If the material 'reconstructs' into the lower position (i.e. if we treat the moved phrase as unmoved) the condition on Pronominal Binding is satisfied.

Reconstruction seems possible below the negative quantifier *nobody* as well (cf. (80c)). In contrast, reconstruction seems to be blocked in (80b) where *only* is present.

(80) a. *Which one of her$_i$ papers did Irene$_i$ assign ___?*
           intended answer: The one she wrote first.

      b. *Which one of her$_{*i/j}$ papers did [**only** Irene]$_i$ assign ___?*
           intended answer: The one she wrote first.

      c. *?Which one of her$_i$ papers did **nobody**$_i$ assign ___?*
           intended answer: The one she wrote first.

If the data hold true this suggests that negative quantifiers such as *nobody* and focus-sensitive particles such as *only* are indeed two different beasts.[39]

What does this leave us with? Both Branan's story adapted for German at the PF level, as well as Beck's story at the LF level lump together certain types of intervention effects. By doing so, they assume covert operators (¬OP licensing *niemand*, ~, question operator) being in a particular (local!) relationship with their respective targets. If, as Branan's story predicts, Grouping has a visible effect in prosody, we might be more inclined to adopt it for the effects that, under purely theoretical terms, both theories can capture, given that he makes use of only one additional covert operator, ¬OP, which has been independently argued for and one PF concept (Contiguity theory, independently doing work for us in many other domains, according to Richards 2014, 2016). Beck, in contrast, needs to assume ~ for both, focus particles and quantifiers, putting focus and quantifier intervention on a semantic par with each other, an assumption which is at best questionable. If native speaker intuitions for focus intervention in English (reported as being plainly ungrammatical) and quantifier intervention in German (reported by many though not all as being unintelligible), as well as Itai Bassi's observation about differing reconstruction possibilities below negative quantifiers and focus particles indeed hold true, it may be premature to try to unify these different types of intervention either within a given language or crosslinguistically (cf. also Szabolcsi 2006 on this point) in either theory.

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[39]This might also be reminiscent of the judgment for German intervention effects with negative quantifier *niemand* which is reported as unintelligible, whereas many of the reported English intervention effects with the focus-sensitive particle *only* are reported as being ungrammatical, as well as the reported crosslinguistically more stable occurrence of focus-sensitive particles as interveners, vs. the more diverse set of quantifiers that act as interveners in the languages of the world.

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