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Remus Gergel

Jonathan Watkins

Topics at the Grammar-Discourse Interface

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Topics at the Grammar-Discourse Interface

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Chapter 1

From a collective to a free-choice determiner in Biblical Hebrew*

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The paper is a diachronic study of the Hebrew universal determiner *kol*. In Biblical Hebrew (BH), *kol* was originally a noun meaning 'entirety' which grammaticalized as a collective determiner akin to *all*. *kol* induces maximality, like the determiner *all*, but, unlike *all*, it is not quantificational, hence its maximality does not preclude homogeneity. Semantically, *kol NP* is interpreted as the plural property corresponding to NP. In argument position, the strongest interpretation of *kol NP* results from the application of the definite type-shift (the *iota* type-shift). But within the scope of certain modals and in downward entailing environments, the indefinite type-shift (existential closure) yields a stronger interpretation. This results in the free-choice (FC)/ negative polarity (NPI) *any* interpretation of *kol* in these environments. In post-Biblical times, the *any* interpretation evolved into the distributive interpretation *every*. The paper thus traces the development of *kol*'s extensive meaning variation 'all/any/every'.

1 Introduction

How does universal quantification develop in a language? Haspelmath 1995 suggests that collective universal determiners (like English *all*) often originate in an adjective meaning *entire/whole*, and that distributive universal determiners (such as English *every*) have various sources – Free Choice (FC) determiners like *any*, or collective universal determiners like *all*. The [FC → distributive] development was elucidated by Beck 2017, and here I would like to describe the [collective → distributive] development. I claim that at least for some languages, the latter development is a cycle which includes the former, as shown in (1) below:[1]

[1]The cyclical nature of (1) is due to its reversibily (cf. van Gelderen 2011 on the pervasive nature of cyclical change). *Every* in present-day English has completed the Distributivity Cycle and

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(1) collective universal determiner ⟶ FC determiner ⟶ distributive universal determiner

In (2) I add the original first step, where an Adj/Noun meaning *entire(ty)* evolves into a collective universal determiner:

(2) The Distributivity Cycle

	I		II		III
Adj/Noun *entire(ty)*	⟶	collective univ. det.	⟶	FC det.	⟶
					distributive univ. det.

I will motivate the Distributivity Cycle on the basis of the history of Hebrew. Steps I + II took place in Biblical Hebrew (BH): The BH noun *kol* 'entirety' grammaticalized as the collective determiner *all*, and did not have a distributive meaning other than as a free-choice (FC)/ negative polarity (NPI) determiner akin to *any*. Modern Hebrew (and probably much earlier) underwent step III, whereby FC *kol* also came to have the universal distributive meaning *every*.[2] The present analysis thus accounts for the surprising array of interpretations 'all/ any/ every' of *kol* in Modern Hebrew without alleging that *kol* is existential rather than universal (E. & Margulis 2013).[3]

The structure of the paper is the following. Section **??** shows that BH should be classified as a NP (rather than a DP) language. Section **??** argues that BH had no definite (or indefinite) determiner. Section **??** demonstrates that the determiner *kol* was originally a noun – it had both the morphology and the distri-

is acquiring a collective interpretation, as in *Everyone gathered in the hall,* by re-entering the cycle.

[2]Hence Hebrew conforms to Haspelmath's view on the direction of development from 'any' to 'every' rather than the other way round, despite his own assessment of Hebrew as a counterexample (Haspelmath 1997:156 fn.13).

[3]The existential analysis of *kol* in Modern Hebrew was applied to the structure *kol NP* with a predicate NP. The partitive *kol DP* is undisputedly universal in Modern Hebrew, casting doubt on the existential analysis of *kol*. I return to Modern Hebrew at the end of the article, in section 6. For now, I note that the root *kll* of *kol* (and the related roots *klkl, kwl, kly*) derive a plethora of nouns and verbs denoting completeness, containment, inclusiveness and generality. Biblical Hebrew has *kālā* 'to complete (intrans.)', *killa* 'to complete (trans.)', *kalīl* 'completely', *hēḵīl* 'to contain', *klī* 'container', *kāl* 'to measure', *kilkēl* 'to contain/ sustain'. Later periods innovated *klal* 'whole', *klali* 'general', *biḵlal* 'at all', *miḵlol* 'ensemble', *tḵula* 'content', *kalal* 'to include', *kolel* 'including', *hiḵlil* 'to generalize', *haḵlala* 'generalization'. Not a single noun or verb derived from *kll* in any period of Hebrew has an existential interpretation. These factors have motivated the analysis of *kol* as universal (Doron & Mittwoch 1986, Glinert 1989, Francez & Goldring 2012, Danon 2013).

bution of other nouns in the language. *kol* was often found heading the pseudo-partitive construction, and accordingly underwent an independent-to-functional meaning-shift which grammaticalized it as the determiner *all*. Section ?? discusses the semantic properties of the determiner *kol*. Section ?? shows that it was not distributive – it was never interpreted as *every*. Sections 3.2 and 3.3 discuss maximality and homogeneity, and show that *kol*'s homogeneity did not result in the lack of maximality which would be expected by Križ 2016. Section ?? describes the operator *each* which was responsible for distributivity in BH. Section ?? discusses the emergence of the free choice (FC) interpretation of *kol* within the scope of certain modal operators. Section ?? briefly relates the post-Biblical development whereby the FC reading gave rise to a distributive reading. This development is not elaborated in the present paper, relying on Beck 2017. Section ?? is the conclusion.

2 Biblical Hebrew as a NP-language

Biblical Hebrew (BH) did not have a distributive universal determiner. This has been claimed for other languages as well, e.g. Salish (Jelinek 1993; Davis 2010; Davis et al. 2014; von Fintel & Matthewson 2008; Matthewson 2001, 2014). Yet BH did not just lack a distributive universal determiner, but other determiners as well. According to the typology of Bošković 2008, BH is an NP-language (in contrast to DP-languages). To derive the interpretation of NPs in argument position, BH makes use of type-shifts, in particular the *definite type-shift* (the *iota* type-shift) and the *indefinite type-shift* (existential closure). This accords with the fact that BH is a language without either a definite determiner or an indefinite determiner, and hence relies on the corresponding type-shifts instead. This is the topic of the next subsection.

2.1 The BH definite article as an inflectional prefix

As argued by Doron & Meir (2013; 2016), the Hebrew article *han-*, though glossed as *the-*, is historically not a D but a word-level inflectional prefix.[4] It does not mark definiteness – which is a phrase-level category, but *state* – which is a word-level category. The article marks nouns (and adjectives) as being in the *emphatic state*. The emphatic state alternates with the other two values of the state category: the unmarked *absolute state* and the *construct state*, which marks the noun

[4] See Rubin 2005: 65 for the history of the article *han-*. Phonological processes delete its final /*n*/, resulting in the prefix *hā-*, or assimilate /*n*/ to the first consonant of the ensuing noun.

as relational/possessee.[5] A noun in the emphatic state projects its emphaticity value to containing NPs, and eventually results in its maximal NP projection being interpreted as definite, through the definite type-shift to ɪx.[[NP]](x).[6] In the simplest case, an unmodified emphatic N forms an emphatic NP by itself, and is interpreted as definite. For example the noun *water* in (**??**) is also a maximal NP, hence its prefixation by *han-* is understood as definite: *the water*. On the other hand, the noun *water* in (**??**) is not a maximal NP but part of a larger NP. Accordingly, its prefixation by *han-* marks it as emphatic, not as definite. It is its emphatic NP projection *well of water* which is interpreted as definite, not *a well of the water* but *the well of water*:[7]

(3) a. *way.yōmɛr ʔɛlōhīm yəhī rāqīaʕ bə.ṯōḵ ham-māyim*
and.said.3MS God be.JUSS.3MS sky inside the-water
Then God said, Let there be a firmament in the midst of the water. (Gen. 1:6)

b. *hinnē ʔānōḵī niṣṣaḇ ʕal ʕēn ham-māyim*
PRSTV I stand.PTCP.MS at well(of) the-water
Behold, I stand by the well of water. (Gen. 24:43)

In contrast, an absolute-state NP is unmarked for definiteness. It is typically interpreted as indefinite as in (4):

(4) *way.yēlɛḵ way.yimṣāʔ-ēhū ʔaryē b-ad-dɛrɛḵ*
and.went.3MS and.met.3MS-ACC.3MS lion.MS in-the-road

[5] The term *emphatic* in 'emphatic state' is a Semiticists' term, used mostly in descriptions of Aramaic, marking a particular value of the inflectional state of a noun and is unrelated both to the phonological term *emphatic* in the sense of *stressed* and to the phonetic term *emphatic* in the sense of *pharyngealized*. The *emphatic state* form of N will be glossed as 'the-N' in the examples below, and the *construct state* – as 'N(of)'.

[6] ɪx.P(x) is the maximal individual satisfying P, defined both for singular and plural predicates (Sharvy 1980).

[7] Unless stated otherwise, all Biblical translations are from the New King James Version (NKJV). The pairs of allophones *b-β, g-ɣ, d-ð, k-x, p-f, t-θ,* are transcribed according to the Hebraist transcription *b-ḇ, g-ḡ, d-ḏ, k-ḵ, p-p̄, t-ṯ*. Three vowel qualities are distinguished, in accordance with the Tiberian tradition, e.g. *ā* vs. *a* vs. epenthetic *ă*. Glosses use the following abbreviations: ACC – Accusative case; DUAL – Dual number; EXST – Existential copula; F – Feminine; ILL – Illative case; IMPR – Imperative; INF – Infinitive; JUSS – Jussive; M – Masculine; MOD – Modal; NEG – Negation; P – Plural; POSS – Possessive case; PRON – Pronominal copula; PRSTV – Presentative; PTCP – Participle; Q – Question particle; S – Singular; SUPR – superlative.

way.yəmīṯ-ēhū
and.killed.3MS-ACC.3MS
When he was gone, a lion met him on the road and killed him. (1Kings 13:24)

The absolute-state subject *lion* of the main clause of (4) denotes the predicate λx.lion(x). This predicate can combine with the clause's predicate λx.P(x) by predicate modification: λx.lion(x) & P(x). The truth value of the sentence is calculated by applying the indefinite type-shift (existential closure): ∃x.lion(x) & P(x).

But since an absolute-state NP is unmarked, it can on principle also be interpreted as definite. The definite interpretation is normally thwarted by the principle of *Maximize Presupposition* (Heim 1991), which would favour the use of an emphatic-state NP to indicate definiteness. Yet there are special cases. An absolute-state NP may be interpreted as definite when the property it denotes holds of a unique entity by virtue of its meaning. This is the case of kind-names (Doron 2003), as in (5), or NPs headed by *kol*, as in (6), to which we return in section 3.

(5) *wə.gār zəʔēḇ ʕim kɛḇɛś… wə-ʔaryē k-ab-bāqār*
and.dwell.MOD.3MS wolf.MS with lamb.MS… and-lion.MS as-the-cattle
yōḵal tɛḇɛn
eat.MOD.3MS straw
The wolf shall dwell with the lamb… and the lion shall eat straw like the ox. (Isa. 11:7)

(6) *way.yōsɛp̄ ʕōḏ dāwiḏ ʔɛṯ kol bāḥūr bə-yiśrāʔēl šəlōšīm ʔālɛp̄*
and.gathered.3MP again David
ACC KOL(of) warrior.MS in-Israel thirty thousand
Again David gathered all the choice men of Israel, thirty thousand. (2Sam. 6:1)

2.2 The BH pseudo-partitive construction

Pseudo-partitives, also called measure constructions, denote an amount (a particular degree of a measure function) of some substance (Selkirk 1977). In Hebrew, the substance is denoted by an indefinite NP complement of the determiner. The indefinite substance-denoting NP may be in the absolute state (as in the (a) examples below) or in the emphatic state (as in the (b) examples below) since emphaticity does not mark the substance NP but the whole construction as definite.

The head of the construction is a degree N which partitions the substance into portions (Schwarzschild 2002; Ruys 2017): (7) partitions days/ commandments into groups of ten, (8) and (9) partition the substance into small/ large groups respectively. (10) partitions the craftsmen into groups consisting of all the craftsmen; since there is only one such group, the absolute version in (??) and the emphatic version in (??) both denote a unique group:[8,9]

(7) a. *ʕăśɛrɛṯ yāmīm*
ten(of) days
ten days (Jer. 42:7)

b. *ʕăśɛrɛṯ had-dəḇārim*
ten(of) the-commandments
the ten commandments (Exod. 34:28)

(8) a. *məʕaṭ mayim*
little(of) water
a little water (Gen. 18:4)

b. *məʕaṭ haṣ-ṣōn hā-hēnnā*
few(of) the-sheep the-those
those few sheep (1Sam. 17:28)

(9) a. *rōḇ ħoḵmā*
much(of) wisdom
much wisdom (Eccles. 1:18)

b. *rōḇ ziḇḥē-ḵɛm*
many(of) sacrifices-POSS.2MP
the multitude of your sacrifices (Isa. 1:11)

[8] Accordingly, *kol NP* is often overtly case-marked in object position by the accusative *ʔɛṯ* which marks definite direct objects, even when NP is headed by a noun in the absolute state. This was already shown in (6) above, and is shown again here in (i) and (ii):(i) *way.yōmɛr ʔɛlōhīm hinnē nāṯattī lāḵɛm ʔɛṯ kol ʕēśɛḇ zōrēaʕ zɛraʕ* and.said.3MS God PRSTV gave.1S to.2MP ACC KOL herb.MS seed.PTCP.MS seedAnd God said, See, I have given you every herb that yields seed. (Gen. 1:29)(ii) *way.yaħărīm ʔɛṯ kol nɛp̄ɛš ʔăšɛr bah* and-destroyed.3MP ACC KOL soul.FS that in.3FSand destroyed all the people who were in it (Josh. 10:39)

[9] The BH *kol NP* is indeed a pseudo-partitive rather than a partitive construction where NP denotes an individual. Though the complement may be a name, as in *kol yiśrāʔēl* 'all Israel' (1Kings 12:20), *kol miṣrāyim* 'all Egypt' (Gen. 41:55), the name in this position never denotes an individual but a set of people, i.e. 'all Israelites', 'all Egyptians'. To express the totality of the geographic entity, the name has to be explicitly modified so as to clarify what kind of portions are being measured: *kōl ʔɛrɛṣ yiśrāʔēl* 'all the land of Israel' (1Sam. 13:19), *kol ʔɛrɛṣ miṣrāyim* 'all the land of Egypt' (Ex. 9:9).

(10) a. *kol ħaḵmē lēḇ*
KOL(of) skilled.MP(of) heart
all who are gifted artisans (Ex. 28:3)

b. *kol hā-ħăḵāmīm*
KOL(of) the-skilled.MP
all the craftsmen (Ex. 36:4)

3 The determiner *kol*

As just shown in (10), *kol* functions as a degree N which heads the pseudo-partitive construction; it denotes the *entirety* degree. The distribution of *kol* indicates that it originally was a noun. Indeed, traditional grammars of the Bible describe *kol* as an "abstract substantive denoting totality" (Joüon 1923: Section ??e). It occurs in the Bible not only in the construct-state form as in (10) above, but also in the absolute and emphatic states, as in (11) and (12) below. In these forms, *kol*'s vowel is not shortened as it often is in the construct state (cf. *kol* in (10)), but is rather a long /ō/, as in *kōl* in (11) and (12):

(11) a. *bə-rāʕāḇ ū-ḇə-ṣāmā ū-ḇə-ʕērōm ū-ḇə-ħōsɛr kōl*
in-hunger and-in-thirst and-in-nakedness
and-in-need(of) KOL
in hunger, in thirst, in nakedness, and in need of everything (Deut. 28:48)

b. *kī ħann-ani ʔɛlōhīm wə-ḵī yɛš lī ḵōl*
because favoured.3MS-ACC.1S God and-because EXST to.1S KOL
for God has been generous to me and I have all I need (Gen. 33:11)

(12) a. *hăḇēl hăḇālīm hak-kōl hāḇɛl*
futility(of) futilities the-KOL futility
Futility of futilities, all is futility. (MEV, Eccles. 1:2)

b. *wa-*YHWH *bēraḵ ʔɛṯ ʔaḇrāhām b-ak-kōl*
and-Lord blessed.3MS ACC Abraham in-the-KOL
and the LORD had blessed Abraham in all things (Gen. 24:1)

The nominal origin of *kol* is also evident in examples where it is still interpreted as the noun 'totality', e.g. when it heads the event-nominalization *count* in (13):

(13) *kol mispar rāšē hā-ʔāḇōṯ … ʔalp-ayim wə-šēš*
KOL(of) count(of) chiefs(of) the-officers … thousand-DUAL and-six
mēʔ-ōṯ
hundred-PL
The total number of chief officers … was two thousand six hundred. (2Chr. 26:12)

I reiterate that the translations of the Biblical verses are not my own, but are received translations, mostly from the New King James Version (NKJV). The translations are faithful to the meaning of each verse as a whole, but cannot be used to gauge the various nuances of the meaning of *kol* or other lexical items.

3.1 Non-distributivity of *kol*

The present subsection demonstrates that *kol NP* is not quantificational/distributive. It denotes the entirety of a (group) individual rather than quantifying over its members/ parts.

The first piece of evidence for the non-quantificational nature of *kol NP* is the possibility of predicating cardinality of it, unlike the English *all NP*, of which cardinality cannot be predicated. *All NP* contrasts in this respect with definite *NP*s: *The apostles were twelve/ *All the apostles were twelve* (Dowty 1987; Winter 2002). In BH we find cardinals predicated of *kol NP*:[10]

(14) *kol han-nɛp̄ɛš lə-ḇēṯ yaʕăqōḇ hab-bāʔā miṣraym-ā šiḇʕīm*
KOL the-soul.FS of-house(of)

Jacob the-go.PTCP.FS Egypt-ILL seventy
All the persons of the house of Jacob who went to Egypt were seventy. (Gen. 46:27)

Second, as shown in (15), *kol NP* does no distribute over another argument in the clause. For example, (**??**) is unlike English and other languages, where the universal subject scopes in two different ways relative to the object, yielding ambiguity in *All the artisans made ten curtains*.

[10]For the sake of brevity I will henceforth mostly use the gloss KOL rather than KOL(of).

(15) a. *way.yaʕăśū kol ħăḵam lēḇ bə-ʕōśē*
and.made.3MP KOL skilled.MS(of) heart among-do.PTCP.MP(of)
ham-məlāḵā … ʕεśεr yərīʕōṯ
the-work … ten curtains
Then all the gifted artisans among them who worked … made ten curtains. (Ex. 36:8) (non-distributive only)

b. *yōm la-*YHWH *ṣəḇāʔōṯ ʕal kol gēʔε wā-rām*
day to-Lord Sabaoth for KOL proud and-lofty
The Lord Almighty has a day in store for all the proud and lofty. (NIV, Isa. 2:12) (non-distributive only)

I am not aware of examples like (15) where *kol NP* distributes over another argument.

Third, even when its complement NP is singular, *kol NP* denotes the entirety of a group and functions as subject of collective predicates, unlike other languages where NP_{sing} only cooccurs with distributive *every*:

(16) a. *way.yiṯqabṣū ʔēlāw kol ʔīš māṣōq*
and.gathered.3MP to.3MS KOL man(of) distress
And everyone who was in distress … gathered to him. (1Sam. 22:2)

b. *way.yiqqāhălū ʔεl ham-mεlεḵ šəlōmō kol ʔīš yiśrāʔēl*
and.assembled.3MP to the-king Salomon KOL man(of) Israel
Therefore all the men of Israel assembled with King Solomon. (1Kings 8:2)

c. *wə-ʔēlay yēʔāsp̄ū kol ħārēḏ bə-ḏiḇrē ʔεlōhē yiśrāʔēl*
and-to.1S congregated.3MP KOL
tremble.PTCP.3MS at-words(of) God(of) Israel
Then everyone who trembled at the words of the God of Israel assembled to me. (Ezra 9:4)

In other examples with NP_{sing}, *kol NP* denotes the entirety of an individual: *the whole NP/all the NP*.[11]

[11] These examples argue against Naudé's 2011a account of *kol*, which consists in translating *kol* as *every* with $NP_{+count-def}$ and as *all* with $NP_{\pm count+def}$. Naudé's account is mistaken for (17). Moreover, it is incompatible with the lack of distributive interpretation of $NP_{+count-def}$ in (15) and (16): we would expect distributivity with *every*. Naudé's account ignores *kol* applied to $NP_{-count-def}$ as in (18), which Naudé claims does not exist (2011a: 418), and also ignores all examples where *kol* can be translated as neither *all* nor *every*, cf. section 3.3 below.

(17) a. *bə-ḵol lēḇ ū-ḇə-ḵol nɛp̄ɛš*
with-KOL heart and-with-KOL soul
with all his heart and all his soul (2Kings 23:3)

b. *kol rōš lā-ḥŏlī wə-ḵol lēḇāḇ dawwāy*
KOL head in-sickness and-KOL heart.MS faint.MS
The whole head is sick and the whole heart faints. (Isa 1:5)

NP may also be an absolute-state mass term:[12]

(18) *wə-ḵōl kɛsɛp̄ wə-zāhāḇ ū-ḵlē nəḥōšɛṯ u-ḇarzɛl qōḏɛš hū la-*YHWH
and-KOL silver.MS

and-gold.MS and-vessels(of) bronze and-iron sacred.MS PRON.3MS to-Lord
But all the silver and gold, and vessels of bronze and iron, are consecrated to the LORD. (JOSH. 6:19)

Fourth, verbal agreement provides additional evidence for the lack of distributivity of *kol NP*. If *kol* were distributive, we would expect *kol* NP_{sing} to strictly agree in the singular like *every* and unlike *all* (which agrees either in the plural or the singular). Yet irrespective of the number marking of NP, verbal agreement is often plural, even for singular NP. Example (19) shows plural agreement when NP is plural, as is to be expected. (20) shows the same plural agreement when NP is singular. The relevant NPs are in the absolute state in the (a) examples, and in the emphatic state in the (b) examples:

(19) a. *wə-ḵol birkayim tēlaḵnā mmayim*
and-KOL knees.FP become.MOD.3FP water
and all knees will be weak as water (Ezek. 21:12)

b. *kī mēṯū kol hā-ʔănāšīm ha-məḇaqšīm ʔɛṯ nap̄š-ɛḵā*
for died.3PL KOL the-men the-seek.PTCP.MP ACC soul-POSS.2MS
for all the men who sought your life are dead (Ex. 4:19)

[12] The nouns *gold* and *silver* are mass nouns in BH, just as they are in Modern Hebrew and in English, since they do not pluralize, and, though singular, denote space-filling substance:

(i) *ʔim yittɛn lī ḇālāq məlō ḇēṯ-ō kɛsɛp̄ wə-zāhāḇ*
if give.MOD.3MS to.1S Balak fullness(of) house-POSS.3MS silver and-gold
If Balak gave me his house full of silver and gold … (MEV, Num. 22:18)

(20) a. *way.yēṣʔū kol ʔīš mēʕāl-āw*
and.left.3PL KOL man.MS from-3MS
So everyone left. (NET, 2Sam. 13:9)

b. *kol hā-ʔɛzrāħ bə-yiśrāʔēl yēšḇū b-as-sukkōṯ*
KOL the-native.MS in-Israel sit.MOD.3MPL in-the-booths
All who are native Israelites shall dwell in booths. (Lev. 23:42)

If *kol* were distributive, it would be unexpected for *kol NP*$_{sing}$ to cooccur with V$_{pl}$ in (**??**), unless we think that Biblical subject-verb agreement is haphazard: there indeed are many other examples where *kol NP* cooccurs with V$_{sing}$. But in fact these are all *kol NP*$_{sing}$. There are no examples where *kol NP*$_{pl}$ cooccurs with V$_{sing}$.[13] This agreement pattern is actually systematic under the assumption that *kol NP* is collective and may hence be marked as plural [kol NP]$_{pl}$ independently of the number feature of NP. Accordingly, V$_{sing}$ only cooccurs with *kol NP*$_{sing}$, whereas V$_{pl}$ cooccurs both with [*kol* NP$_{sing}$]$_{pl}$ and [*kol* NP$_{pl}$]$_{pl}$.[14]

Lastly, it is important to distinguish distributivity from what has been called *lexical distributivity* (Winter 2000), which is due to the lexical nature of the predicate. E.g. *weeping* in (21) below can only be predicated of a group by attributing it to the individual members of the group.[15] Lexical distributivity does not induce scopal ambiguity (de Vries 2017) and is not mediated by quantifiers.

(21) *wə-ḡam ham-mɛlɛḵ wə-ḵol ʕăḇāḏ-āw baḵū bəḵī gāḏōl*
and-also the-king and-KOL servants-POSS.3MS wept.3MP weeping big
məʔōḏ
very
Also the king and all his servants wept very bitterly. (2Sam. 13:36)

I conclude that *kol* is not quantificational. Rather, *kol* applies to a NP which denotes substance, mass or count, singular or plural, and yields a portion of the NP substance that consists of the entirety of those individuals whose parts satisfy

[13] I exclude irrelevant examples such as left-conjunct agreement (Doron 2005), passive verbs, and verbs where the subject of V$_{sing}$ is actually not *kol NP*$_{pl}$ but a null expletive as in (i) below: (i) *wa.yəhī kol han-nōp̄līm b-ay-yōm ha-hū mē-ʔiš wə-ʕaḏ ʔiššā šənēm.ʕāśār ʔālɛp̄* was.3MS KOL the-fall.PTCP.MP in-the-day the-that of-man and-including woman twelve thousand So it was that all who fell that day, both men and women, were twelve thousand (Josh. 8:25)

[14] Under Naudé's 2011a account, the agreement pattern remains mysterious.

[15] Lexical distributivity can be averted by the use of collective adverbs such as *together*, e.g.(i) *yaħaḏ ʕālay yiṯlaħăšū kol śōnəʔ-āy* together at.1S whisper.MOD.3MP KOL hate.PTCP.MP-POSS.1S All who hate me whisper together against me (Ps. 41:8)

NP. Hence *kol* maps a predicate P to the set of all individuals, atoms or sums, satisfying *P.[16,17]

(22) [[kol]] = λP. λx. *P(x)

In argument position, the predicate *kol NP* is given a definite interpretation as the maximal individual ιx.*kol*[[*NP*]](x) satisfying it.[18]

3.2 Maximality of *kol*

We have seen that *kol* does not contribute distributivity. So what does it contribute? Why say 'all the men' rather than simply 'the men', if it is not for the purpose of allowing distributivity?

The answer seems to be that *kol NP* denotes the sum of *all* parts of NP, including absolutely all of them (Brisson 1997, 2003). This is illustrated by the following example, which demonstrates that tearing away the kingdom is compatible with not tearing away all the kingdom:

(23) *qārōaʕ ʔɛqraʕ ʔɛṯ ham-mamlāḵā mē-ʕālɛḵā ... raq ʔɛṯ kol*
tear.INF tear.MOD.1S ACC the-kingdom from-over.2MS ... but ACC KOL
ham-mamlāḵā lō ʔɛqraʕ – šēḇɛṭ ʔɛḥāḏ ʔɛtēn
the-kingdom NEG tear.MOD.1S – tribe.MS one.MS give.MOD.1S
li-ḇn-ɛḵā
to-son-POSS.2MS
I will surely tear the kingdom away from you ... However, I will not tear away the whole kingdom; I will give one tribe to your son. (1Kings 11:13)

kol disallows the slack allowed by *the*$_{pl}$ (Krifka 2006; Lasersohn 1999; Schwarz 2013). Lasersohn characterizes *slack* as pragmatic looseness which involves approximation to the truth that does not affect truth conditions. When speaking loosely, the speaker takes it to be unlikely that the (possible) difference between the actual world and his assertion is relevant for present purposes. To adapt an example of Lauer 2012, *I live in Tel-Aviv* is true in a context where the speaker lives in Jaffa, which abuts Tel-Aviv, but is not part of it. Various expressions, such

[16] *P denotes the minimal divisive predicate (Krifka 1989) which includes P: if P is itself divisive, i.e. plural or mass, then *P=P; otherwise *P is the pluralized version of P.

[17] I assume that the absolute/emphatic *kōl* in (11)/(12) above combines with a null P which spans the entire relevant domain.

[18] In a downward entailing environment, the definite interpretation is disfavoured, as it is weaker than the indefinite (existential closure) interpretation. We return to this below in section 3.3.

as *proper*, are seen as *slack regulators* in this respect. *I live in Tel-Aviv proper* cannot be used with slack: it is never appropriate if the speaker lives in Jaffa.

The plural definite the_{pl} displays pragmatic slack: it makes a sentence such as *The boys smiled* true even if there are some exceptions, assuming those exceptions do not matter for present purposes. The role of *all*, on this view, is that of a slack regulator. It disallows the flexibility permitted by the plural definite the_{pl}. This view integrates what Dowty 1987 called the 'maximizing effect' of *all*. *All the boys smiled* is interpreted maximally.

Winter 2001 attributes the maximality of *all* to its being quantificational. Winter shows that (??) but not (??) is entailed by (25):

(24) a. The members of the organizing committee met.
b. All the members of the organizing committee met.

(25) The organizing committee met.

(24a) has a reading equivalent to (25). Under this reading the denotation of the definite *the members of the organizing committee* is mapped to a group individual representing the committee itself. Such a process is impossible in (??), where the only way to achieve collectivity is to use quantification which requires every committee member in (??) to participate in the meeting.

In BH, the maximality of *kol* is not due to quantification over individuals, since *kol* is not quantificational. Rather, the maximality of *kol* is a consequence of measurement as expressed by the pseudo-partitive construction. Measuring an individual requires taking into account its full extent, preventing non-maximality.[19]

3.3 Homogeneity of *kol*

In dictionaries and traditional grammars of Biblical Hebrew, *kol* is translated as *all* (sometimes as *every*, mistakenly in my view). But in addition, these sources mention that in combination with negation, *kol* is interpreted as *none at all* (rather than *not all*). Hence, it seems to exhibit what has been called *polarity*

[19] I therefore beg to differ from one passage in the medieval Rabbinic exegetical literature (Assaf 1929: 245), where the maximality of *kol* is disputed, and it is argued that *kol* only gives rise to an existential commitment. The problem is the apparent contradiction between two verses in Ch. 9 of the book of Exodus, the first describing the extinction of all Egyptian livestock by the plague, and the second – Moses' subsequent words to Pharaoh, which presuppose that not all the livestock had perished. (i) *way.yāmāṯ kōl miqnē miṣrāyim* (ii) *wə-ʕattā šəlaḥ hāʕēz ʔeṯ miqnə-ḵā* and.died KOL livestock(of) Egypt and-now send gather ACC livestock-POSS.2MSAnd all the livestock of Egypt died. (Ex. 9:6) Send now and gather your livestock. (Ex. 9:19)

(Löbner 2000) or *homogeneity* (recently Križ 2016), which is surprising, since this phenomenon is said to be incompatible with the maximality of *all* (Križ argues that maximality is the by-product of lack of homogeneity).

3.3.1 The puzzle

Homogeneity is a property of plural predication which requires that a plurality not be mixed with respect to the property predicated of it (or its negation). For (??) below to be true, the subject must have reacted to all the external stimuli. For (??) to be true, the subject must have reacted to none of the external stimuli. In mixed scenarios, where the subject reacted to some but not all of the stimuli, neither (??) nor (??) is true. These scenarios are what Križ calls an "extension gap", where (??) and (??) are neither true nor false:

(26) a. The subject reacted to the external stimuli.
b. The subject did not react to the external stimuli.

Homogeneity is also found with measure phrases, as in the following English examples from the web.

(27) a. I didn't add the glass of chardonnay. (i.e. I didn't add any of it)
b. It said it had friction modifier already in it so I didn't add the bottle of motorcraft modifier.

Homogeneity disappears in English in the presence of *all*. In (28), if the subject reacted to some but not all of the stimuli, (??) is simply false and (??) is true.

(28) a. The subject reacted to all the external stimuli.
b. The subject did not react to all the external stimuli.

It is therefore surprising that in BH, sentences with *kol* do exhibit homogeneity. In BH, negating a sentence with *kol* does not yield 'not all' but 'none at all', i.e. 'not any'.

(29) a. *wə-ḵōl śīaħ haś-śāḏɛ ṭɛrɛm yihəyɛ ḇ-ā-ʔāreṣ*
and-KOL plant(of) the-field still.not be.MOD.3MS in-the-earth
wə-ḵōl ʕēśɛḇ haś-śāḏɛ ṭɛrɛm yiṣmāħ
and-KOL herb(of) the-field still.not grow.MOD.3MS
before any plant of the field was in the earth and before any herb of the field had grown (Gen. 2:5)

≠ before all plants of the field were in the earth and before all herbs of the field had grown

b. *kol ʔăšɛr lō yāḏəʕū ʔēṯ kol milḥămoṯ kənāʕan*
KOL that NEG knew.3MP ACC KOL wars(of) Canaan
all who had not experienced any of the wars in Canaan (Judg. 3:1)
≠ all who had not experienced all of the wars in Canaan

c. *lō təḇaʕărū ʔēš bə-ḵōl mōšḇōṯ-ēḵɛm bə-yōm haš-šabbāṯ*
NEG kindle.MOD.2MP fire in-KOL dwellings-POSS.2MP on-day(of) the-Sabbath
You shall kindle no fire throughout your dwellings on the Sabbath day. (Ex. 35:3)
≠ You shall not kindle fire throughout all your dwellings.

There is a well-known dialogue in the story of the Garden of Eden, where the snake queries Eve as in (30). Her answer starts by denying that she and Adam had been forbidden from eating any of the fruit of the garden, thus indicating that she interprets the snake's use of *kol* as involving homogeneity:[20]

(30) *ʔap̄ kī ʔāmar ʔɛlōhīm lō tōḵlū mik-kōl ʕēṣ hag-gān*
indeed indeed said.3MS God
NEG eat.MOD.2MP from-KOL tree(of) the-garden
Has God indeed said 'You shall not eat of any tree of the garden'? (MEV, Gen. 3:1)

According to Križ, maximality derives from lack of homogeneity, whereas here we see that the maximality of *kol* is compatible with its homogeneity. A parallel puzzle in English is mentioned by Križ (2016: 515), where maximality does not depend on lack of homogeneity. His example is of definite plurals with numerals. These plurals are homogeneous in English, but are only interpreted maximally, e.g. *The six professors smiled* requires all of them to have smiled. Interestingly, the syntax of such plurals in BH parallels that of *kol NP*. Both have the structure *N(of) NP* where N functions as a degree determiner and NP is indefinite irrespective of its emphatic marking (as emphaticity marks the whole construction as definite rather than the complement NP):

[20] Other translators, for example the NKJV, consider *kol* here to be focused, and hence translate *Has God indeed said, 'You shall not eat of **every** tree of the garden'?*

(31) a. *šēšɛṯ yəmē ham-maʕăśɛ*
six(of) days(of) the-work
the six working days (Ez. 46:1)

b. *kōl yəmē ħayy-āw*
KOL(of) days(of) life.PL-POSS.3MS
all the days of his life (1Sam. 7:15)

The structure in (31) is that of the pseudo-partitive discussed above in section 2.2. In English too, definite plurals with numerals are not interpreted like other definite plurals. A definite plural does not presuppose anything beyond existence; in particular it does not presuppose uniqueness. A definite plural with the numeral *six* presupposes contextual uniqueness of a group individual with the measure *six*. The phrase *the six working days* is interpreted as the unique individual in the context of a week which has measure *six* out of the substance *working days*. Accordingly, the English *the six working days* is a pseudo-partitive, i.e. a measure phrase, just like the BH (**??**). The denotation of the relevant degree is given in (32), where #x denotes the number of atoms that the individual x consists of.

(32) $[[\check{s}\bar{e}\check{s}\varepsilon\underline{t}]] = \lambda P.\ \lambda x.\ ^{*}P(x)\ \&\ \#x = 6$

As in the case of *kol*, measurement is what guarantees maximality despite homogeneity, both in Hebrew and in English. Unlike the case of *kol*, $\iota x.[[\check{s}\bar{e}\check{s}\varepsilon\underline{t}\ NP]](x)$ is not necessarily defined (unless the cardinality of NP is 6).[21]

3.3.2 An account of homogeneity

As was shown in section 3.1, *kol NP* is a predicate, hence there are two ways of combining it with the sentence predicate VP which is of the same type. One way, represented in (**??**), is to type-shift *kol NP* to type *e* by applying the definite type-shift. The other way, represented in (**??**), involves combining *kol NP* with VP via predicate modification, followed by the application of the indefinite type-shift (existential closure).

[21] When the complement NP of the numeral is in the absolute state, the measure phrase is interpreted as indefinite. Moshavi & Rothstein 2018 attributes the "durational measuring phrase" interpretation of such phrases, e.g. (i) below, to indefiniteness. Yet definite measure phrases are also attested, such as (**??**). (i) *šēšɛṯ yāmīn taʕăḇōḏ u-ḇ-ay-yōm haš-šəḇīʕī tišbōṯ*six(of) days work.MOD.2MS and-in-the-day the-seventh rest.MOD.2MSDo your work in six days and rest on the seventh day. (CEV; Exod. 34:21)

(33) a. S_t b S_t
2 2
NP_e VP_{et} ∃ S_{et}
2 2
ι NP_{et} NP_{et} VP_{et}
2 2
kol NP_{et} *kol* NP_{et}

Example needs work

In general, the stronger interpretation is the definite interpretation in (??). But in a downward entailing environment, negation for example, (??) is stronger. If no element of NP satisfies VP, then neither does the maximal element. But if the maximal element of NP does not satisfy VP, this does not entail that no element of NP does.

The two type shifts available for the derivation of a sentence with *kol NP*, coupled with the *Stronger Meaning Hypothesis*: Pick the stronger meaning (Dalrymple et al. 1994), predict the following:[22]

(34) a. Definite type-shift (??) in non-downward-entailing environments
b. Indefinite type-shift (??) in downward-entailing environments

Indeed the indefinite type-shift is attested in downward entailing environments, including, besides negation, other downward entailing environments as well. Indefinite type-shifted *kol NP* can thus be interpreted as a Negative Polarity Item (NPI).[23]

(35) negation

a. *wə-ʔēn kol ħāḏāš taħaṯ haš-šāmɛš*
and-NEG KOL new under the-sun
And there isn't anything new under the sun. (Eccles. 1:9)
≠ Not all new things are under the sun.

[22] The analysis follows Krifka 1996 (also Malamud 2012; Spector 2018), where plural referential expressions are interpreted as universal/ existential on the basis of the Stronger Meaning Hypothesis.

[23] Raising *kol NP* out of the downward-entailing environment and interpreting it by the definite type-shift (??) does not yield the right truth conditions in the question example in (38), and is impossible in (41) because of the island nature of the conditional protasis. Hence there is no way of forgoing the indefinite type-shift (??).

b. *lō yirʔɛ kol ħaḵmē lēḇ*
NEG see.MOD.3MS KOL skilled.MP(of) heart
He shows no partiality to any who are wise of heart. (Job 37:24)
≠ He shows no partiality to all who are wise of heart.

c. *wə-lō māṣəʔū ḵol ʔanšē ħayil yəḏē-hɛm*
and-NEG found.3MP KOL men(of) might hands-POSS.3MP
And none of the mighty men have found the use of their hands. (Ps. 76:5)
≠ And not all the mighty men have found the use of their hands.

(36) generic NP

a. *nɛp̄ɛš ʔăšɛr tiggaʃ bə-ḵol dāḇār ṭāmē … wə-hū ṭāmē wə-ʔāšēm*
soul.FS that
touch.MOD.3FS at-KOL thing unclean… and-he unclean and-guilty
a person who touches any unclean thing… he shall be unclean and guilty (NET, Lev. 5:2)
≠ a person who touches all unclean things… he shall be unclean and guilty

b. *ʔārūr šōḵēḇ ʃim kol bəhēmā*
cursed.MS lie.PTCP.MS with KOL animal
Cursed is the one who lies with any kind of animal. (Deut 27: 21)
≠ Cursed is the one who lies with all the kinds of animals.

(37) FC NP
kol nɛp̄ɛš ʔăšɛr tōḵal kol dām wə.niḵrəṭā han-nɛp̄ɛš ha-hī mē-ʃamm-ɛhā
KOL soul.FS
that eat.MOD.3FS KOL blood and.will.be.cut.off.3FS the-soul.FS the-that.FS
from-people-POSS.3FS
Whoever eats any blood – that person will be cut off from his people. (Lev. 7:27)
≠ Whoever eats all the blood – that person will be cut off from his people.

(38) question

hinnē ʔănī YHWH *ʔɛlōhē kol bāśār – hā-mimɛnni*
PRSTV I Lord God(of) KOL flesh – Q-from.1S
yippālē kol dāḇār
be.beyond.ability.MOD.3MS KOL thing
Behold, I am the LORD… Is there anything too hard for Me? (Jer. 32:27)
≠ Are all things too hard for Me?

(39) complement of adversative verbs
wə-šōmēr yāḏ-ō mē-ʕăśōṯ kol rāʕ
and-keep.PTCP.3MS hand-POSS.3MS from-do.INF KOL evil
… and keeps his hand from doing any evil (Isa. 56:2)
≠… and keeps his hand from doing all evil things

(40) *before*-PPs
ʕōḏ-ɛnnū ḇə-ʔibb-ō lō yiqqāṭēp wə-liṗnē ḵol ħāṣīr yīḇāš
still-3MS in-green-POSS.3MS NEG cut.MOD.3MS

and-before KOL plant wither.MOD.3MS
While it is yet green and not cut down,it withers before any other plant. (Job 8:12)
≠ While it is yet green and not cut down,it withers before all other plants.

(41) conditional protasis

a. *ʔim yiggaʕ ṭəmē nɛpɛš bə-kol ʔēllɛ*
if touch.MOD.3MS unclean(of) dead.body at-KOL these
ha-yiṭmā
Q-be.unclean.MOD.3MS
If one who is unclean touches any of these, will it be unclean? (Hag. 2:13)
≠ If one who is unclean touches all of these, will it all be unclean?

b. *kī yištaħū*
if worship.MOD.3MS
l-aš-šɛmɛš ʔō l-ay-yārēaħ ʔō lə-kol ṣḇā haš-šāmayīm …
to-the-sun or

to-the-moon or to-KOL host(of) the-heavens …
If [he] worships the sun or moon or any of the host of heaven … (Deut. 17:3)

≠ If [he] worships the sun or moon or all the host of heaven …

(42) comparative PPs
wat.tērɛḇ maśʔaṯ binyāmin mim-maśʔōṯ kull-ām
and.was.as.large.3FS serving.FS(of) Benjamin as-servings(of) all-3MP
ħāmēš yāḏōṯ
five portions
but Benjamin's serving was five times as much as any of theirs (Gen. 43:34)
≠ but Benjamin's serving was five times as much as all of theirs

4 Distributivity in BH

In English, *all* is quantificational, and may be interpreted distributively. As shown above, *kol* is a non-quantificational degree determiner in BH, and is not distributive. Distributivity is achieved in BH by other means. Various BH syntactic structures express distributivity through the LF application of the operator *each* (defined by Link 1987) to a property:

(43) $[[\text{each}]] = \lambda P.\lambda x.\forall y \leq x\ [\text{Atom}(y) \longrightarrow P(y)]$

We only expect the distributivity operator to modify VPs predicated of a subject *kol NP* if the latter is derived by the definite type shift (**??**). Such *kol NP* denotes an individual, for which the ≤ part-of relation is defined. We indeed do not find the distributivity operator when *kol* is interpreted as *any*, by the application of the indefinite type shift (**??**).

4.1 The lexical item *ʔīš* 'each'

In the simplest case, the distributivity operator is expressed by a VP-premodifier, the lexical item *ʔīš* 'each' (literally 'man'), sometimes reduplicated as in (45):

(44) a. *way.yaggīšū kol hā-ʕām ʔīš šōr-ō*
and.brought.3MP KOL the-people.MS each OX-POSS.3MS
So every one of the people brought his ox. (1Sam. 14:34)

b. *kī kol hā-ʕammim yēlḵū ʔīš bə-šēm ʔɛlōh-āw*
for KOL the-peoples walk.MOD.3MP each in-name(of) God-POSS.3MS
wa-ʔănaħnū nēlēḵ bə-šēm YHWH *ʔɛlōh-ēnū*
and-we walk.MOD.1P in-name(of) Lord God-POSS.1P
For all people walk each in the name of his God, but we will walk in

the name of the LORD our God. (Mic. 4:5)

(45) *way.yāḇōʔū kol ha-ħăḵāmīm… ʔīš ʔīš mim-məlaḵt-ō ʔăšɛr*
and.came.3MP KOL the-experts… each each from-work- POSS.3MS
hēmmā ʕōśīm
that they do.PTCP.MP
Then all the craftsmen … came each from the work he was doing. (Ex. 36:4)

4.2 Reduplication

The distributivity operator can also be expressed by reduplicative adverbials, as shown by Beck & von Stechow 2006, **Naudé2005**

(46) a. *way-yittənū ʔēlāw kol nəṣīʔē-hɛm maṭṭɛ lə-nāṣī*
and-give.MOD.3MP to.3MS KOL leaders-POSS.3MP rod for-leader
ʔɛħāḏ maṭṭɛ lə-nāṣī ʔɛħāḏ
one rod for-leader one
and each of their leaders gave him a rod apiece (Num. 17:21)

b. *qəħū lāḵɛm min hā-ʕām šənēm.ʕāśār ʔănāšīm ʔīš*
take.IMPR.2MP to.2MP from the-people twelve men man
ʔɛħāḏ ʔīš ʔɛħāḏ miš-šāḇɛṭ
one man one from-tribe
Take for yourselves twelve men from the people, one man from every tribe (Josh. 4:2)

c. *middē šānā bə-šānā*
whenever year in-year
year after year (1Sam. 7:16)

d. *bə-ḵol dōr wā-ḏōr*
in-KOL generation and-generation
forever and ever (Ps. 45:17)

e. *wə.sāp̄əḏū … kol ham-mišpāħōṭ han-nišʔārōṭ mišpāħōṭ mišpāħōṭ ləḇāḏ*
mourn.MOD.3MP

KOL the-families the-remain.PTCP.MP families families alone
all the families that remain shall mourn, every family by itself (Zech. 12:14)

4.3 Floated *kol*

Another VP-premodifier which is interpreted as *each* is the inflected *kol*.[24] In (??), the subject is null and the predicate is modified by *kullām*, i.e. *kol* inflected in the plural. In (??) the subject is a group individual, and the predicate is again modified by *kullām*.

(47) a. *kull-ām* *lə-dark-ām* *pānū*
KOL-POSS.3PL to-way-POSS.3MP turned.3PL
They all look to their own way. (Isa. 56:11)

b. *wə-kol* *ṣāray-iḵ* *kull-ām* *b-aš-šəḇī*
and-KOL adversaries-POSS.2FS KOL-POSS.3PL in-the-captivity
yēlēḵū
go.MOD.3MP
And all your adversaries, every one of them, shall go into captivity. (Jer. 30:16)

kol may also be inflected in the singular, e.g. *ḵullō* in (48):

(48) *ʔɛpēs qāṣē-hū ṯirʔɛ wə-ḵull-ō lō ṯirʔɛ*
edge(of) extremity-POSS.3MS see.MOD.2MS
and-KOL-POSS.3MS NEG see.MOD.2MS
You shall see the outer part of them [the nation], and shall not see every one of them. (Num. 23:13)

4.4 Dependent relational nouns

Relational nouns denoting e.g. body-parts, kinship and socially defined roles, or other relations which involve atomic individuals rather than groups, give rise to distributive interpretations when they depend on group nouns. Examples are shown in (49). Each example includes a dependent relational noun, where the dependence is marked by POSS inflection, as in (49) a-b, by the presence of a possessor which raises in LF to yield inverse scope readings, as in (49) c-d, or by the presence of an implicit possessor, as in (49) e-f :

[24] This modification has been called "quantifier float" by Shlonsky 1991 and Naudé 2011b.

(49) a. *kol šōməʃ-ō təṣillɛnā štē*
KOL hear.PTCP.MS-POSS.3MS tingle.MOD.3FP both.FP(of)
ʔozən-āw
ear.FP-POSS.3MS
Both ears of everyone who hears it will tingle. (1Sam. 3:11)

b. *kol hā-ʔănāšīm hay-yōḏəʃīm kī məqaṭṭərōṯ nəšē-hɛm*
KOL the-men the-know.PTCP.MP that fume.PTCP.FP wives-POSS.3MP
lē-ʔlōhīm ʔăḥērīm
to-gods other.MP
all the men who knew that their wives had burned incense to other gods (Jer. 44:15)

c. *ū-ḇə-lēḇ kol ḥăḵam lēḇ nāṭattī ḥoḵmā*
and-in-heart(of) KOL skilled.MS(of) heart
have.put.1S wisdom
I have put wisdom in the hearts of all the gifted artisans. (Ex. 31:6)

d. *ū-mik-kol hā-ḥay mik-kol bāśār šənayīm*
and-of-KOL the-live.PTCP.MS of-KOL-flesh two of-KOL
mik-kol tāḇī ʔɛl hat-tēḇā
bring.MOD.2MS to the-ark
And of every living thing of all flesh you shall bring two of every sort into the ark. (Gen. 6:19)

e. *kī kull-ō ḥānēp̄ ū-mēraʃ wə-ḵol pɛ dōḇēr nəḇālā*
because KOL-3MS godless
and-evildoing and-KOL mouth speak.PTCP.MS vileness
for the whole of it [of the nation] was godless and evildoing, every mouth was speaking vile words (NET, Isa. 9:17)

f. *ḥārū yōšəḇē ʔɛrɛṣ … suggar kol*
burned.3MP inhabitants(of) earth… shut.up.3MS KOL house
bayiṯ mib-bō
from-come.INF
the inhabitants of the earth are burned … every house is shut up so that no one may go in (Isa. 24:10)

The dependence of the relational noun on a group individual gives rise to the introduction of the distributivity operator at the predicate level (Winter 2000).

The LFs of (51a-f) can be represented as (50) a-f respectively. The predicate abstracted from the clause which contains the bound x_i is distributively predicated of the group subject:

(50) a. [[all who hear it] [each$_i$ [both ears of x_i will tingle]]]
b. [[all men] [each$_i$ [x_i knew that x_i's wife had burned incense to other gods]]]
c. [[all gifted artisans] [each$_i$ [I have put wisdom in the heart of x_i]]]
d. [[all kinds] [each$_i$ [bring two of x_i into the ark]]]
e. [...[all of the nation] ...] [each$_i$ [the mouth (of x_i) was speaking vile words]]
f. [...[the inhabitants] ...] [each$_i$ [the house (of x_i) is shut up so that no one enter it]]

5 Free Choice

Existential modals such as *may* give rise to what has been called *the distribution requirement* by Kratzer & Shimoyama 2002. This requirement results in a Free Choice (FC) reading of particular expressions under existential modals.[25] We find the same reading for *kol NP* in Hebrew. Under an existential modal, *kol NP* receives a FC reading, as in the following examples, where *kol NP* is satisfied by different individuals in different accessible worlds:

(51) a. *wa.ʔăḵaltɛm ʔōṯ-ō bə-ḵol māqōm ʔattɛm ū-ḇēṯ-əḵɛm*
and.eat.MOD.2MP ACC-it in-KOL place you.MP and-house-POSS.2MP
You may eat it in any place, you and your households. (Num. 18:31)
b. *wə-ħēlɛḇ nəḇēlā … yēʕāśɛ lə-ḵol məlāḵā wə-ʔāḵōl*
and-fat(of) animal … be.used.MOD.3MS to-KOL craft and-eat.INF
lō ṯōḵəlu-hū
NEG eat.MOD.2MP-ACC.3MS
And the fat of an animal … may be used in any other way; but you shall by no means eat it. (Lev. 7:24)

The FC reading is also available in the scope of imperative/commissive modal operators (cf. Dayal 2013) if *kol NP* is modified by a relative clause, as in (52)

[25] According to Bar-Lev Moshe & Fox 2017, ◊(p ∨ q) excludes ◊(p & q) by exhaustivity, but includes ◊p & ◊q by innocent inclusion, hence implies FC.

below. In such examples, *kol* is interpreted as *whatever/ whoever* and receives a FC interpretation:

(52) a. *kol hab-bēn hay-yilōḏ ha-yəʔōr-ā taślīḵu-hū*
KOL the-son the-born.PTCP.MS the-river-ILL cast.MOD.2MP-ACC.3MS
Every son who is born you shall cast into the river. (Ex. 1:22)

b. *kol makkē yeḇūsī b-ā-rīšōnā yihəyɛ lə-rōš ū-lə-śar*
KOL attack.PTCP.MS Jebusite in-the-first be.MOD.3MS to-chief and-to-captain
Whoever attacks the Jebusites first shall be chief and captain. (1Chron. 11:6)

A minimal pair is shown in (53), where *kol+relative clause* has a FC interpretation in the commissive (**??**), but merely a collective interpretation in the episodic (**??**):

(53) a. *wə-ḵōl ʔăšɛr tōmar ʔēlay ʔɛʃɛśɛ*
and-KOL that say.MOD.2MS to.1S do.MOD.1S
and I will do whatever you say to me (Num. 22:17)

b. *way.yaʃaś kōl ʔăšɛr ʔāmār*
and.did.3MS KOL that said.3MS
so [Moses] did all that he had said (Ex. 18:24)

FC readings have been accounted for by the pervasive view (from Kadmon & Landman 1993 to Chierchia 2013) that FC items are existential.[26] In the case of *kol*, the FC interpretation is due to the indefinite type-shift in (33) b above. Under the present approach, the availability of this type-shift depends on its deriving a stronger reading than the competing definite type-shift. This indeed seems to be the case. If John or Mary may sign a check, then each of them may. But if John and Mary may sign the check, it is not clear they may each sign separately.[27]

I assume that the FC interpretation was eventually reanalysed as part of the lexical meaning of *kol*. The change conforms to Eckardt's (2006: 236) notion of semantic reanalysis – the overall sentence meaning did not change, but there was redistribution of conceptual content: *kol* acquired FC interpretation in the environment of certain modal operators.

[26] Menéndez-Paula 2010 and Zimmermann 2008 treat FC items as universal, but this crucially depends on the distributive interpretation of the universal determiner, which *kol* does not have.

[27] In general, ◊P(a∨b) ⟶ ◊P(a) & ◊P(b), but ◊P(a⊕b) -/⟶ ◊P(a) & ◊P(b).

6 Beyond step II

In Modern Hebrew (MH), we find that step III of the Distributivity Cycle has occurrred (perhaps as early as Rabbinic Hebrew). The universal determiner *kol* is now interpreted as the distributive *every* in addition to its categorization as *any*:

(54) *kol* NP = every/any NP_{et}

I will not discuss step III in the present paper, and rely on Beck's 2017 account of the development from FC to distributive interpretations. Beck shows how conjunction of the alternative propositions which underlies FC readings develops into universal quantification over individuals.

Moreover, in post-Biblical Hebrew, definite noun phrases are not NPs but are all headed by D; as shown by Doron & Meir 2016, the article *ha-* was reanalized as a definite determiner of category D. Accordingly, when the complement of *kol* is definite, it is categorized as an individual DP rather than a predicate NP:

(55) *kol* DP = all DP_{e}

The construction in (55) is definite due to its partitive structure. There isn't any longer an indefinite type-shift giving rise to NPI/FC interpretations, not even in downward entailing or modal environments, as shown in (56). (56) contrasts with parallel Biblical examples such as (29) – (30) or (41) – (42) above, which have a pseudo-partitive structure, and hence have NPI/FC interpretations.

(56) a. *ha-hanhala lo hitħayḇa le-qabel et kol ha-tlunot*
the-administration NEG commited to-accept ACC KOL the-complaints
The administration did not commit to accept all/*any complaints.

b. *ha-hanhala hitħayḇa le-qabel et kol ha-tlunot*
the-administration commited to-accept ACC KOL the-complaints
The administration commited to accept all/*any complaints.

However, in construction (54), we do find NPI/FC interpretations, as shown in (57):

(57) a. *ha-hanhala lo hitħayḇa le-qabel kol tluna*
the-administration NEG commited to-accept KOL complaint
The administration did not commit to accept every/any complaint.

b. *ha-hanhala hitħayḇa le-qabel kol tluna*
the-administration commited to-accept KOL complaint
The administration commited to accept every/any complaint.

The Biblical origins of the *any NP* construction in (54) are also manifested by the number feature of *any*'s complement within this construction. It is only within this construction that the complement of *kol* can be a plural NP in MH, just like in the Biblical (??), (37b-c). The following are MH examples found on the web:

(58) a. *lo nimce'u kol tlunot mucdaqot*
NEG found KOL complaint.FP justified.FP
There weren't any justified complaints found.

b. *anu mitħayḇim le-facot eṯkem begin kol nezaqim*
we commit to-compensate you for KOL damage.MP
še-yaħulu aleyḵem
that-occur.3MP on.you
We commit to compensate you for any damages incurred to you.

We thus find remnants of Biblical syntax within the MH (54) construction where *kol* is interpreted as *any*, alongside the new *every* interpretation derived from it. The original definite interpretation of *kol* as *all* is now restricted to the partitive (55) structure. This completes the account of the full array of *kol*'s interpretations in MH.

7 Conclusion

Hebrew originally lacked a distributive determiner *every*. Distributivity was achieved in Biblical Hebrew through operators applying to the sentence predicate, such as the distributivity operator *each*. Step I of the Distributivity Cycle consisted in the noun *kol* 'entirety' grammaticalizing as the collective determiner *all*. The determiner was not quantificational – its combination with a NP yielded the plural property corresponding to NP. In argument position, it was interpreted either by the definite or the indefinite type-shift, depending on which yielded a stronger reading. This gave rise to step II, where *kol* received NPI/FC interpretations in particular environments. It is only at step III that *kol* acquired a distributive interpretation. Modern Hebrew *kol* also retained its previous uses, which accounts for the extensive variation in its interpretations: 'all/ any/ every'. The paper has shown how these interpretations unfolded along the Distributivity Cycle.

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Chapter 2

Grammaticalization parameters and the retrieval of alternatives: Latin *nec* from discourse connector to uninterpretable feature

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By means of the study of Latin focus-sensitive negation *nec* ('furthermore not'; 'neither'; 'not even'), I address a more general question on the scope and the cyclicity of semantic change. I review Lehmann's syntagmatic parameters of grammaticalization (structural scope, bondedness, syntagmatic variability) with the aim to evaluate to what extent they are reflected in some types of semantic change. With *nec* we see, from Latin to Romance, the evolution of a discourse-structuring particle with an additive component into the building block of new emphatic (scalar) negative polarity items, which in turn are later reanalyzed as elements of Negative Concord (endowed with uninterpretable formal features). I argue that an important aspect of this change concerns the way alternatives to the focused element are retrieved in the context. I propose that increase in bondedness and decrease in syntagmatic variability correlate with a change in the form taken by alternatives, which decrease in scope from discourse units to individual alternatives.

1 Introduction

Recent formal research on semantic change has dealt in particular with change affecting elements of the functional lexicon, and has already provided a number of significant generalizations on the way diachronic phenomena of this kind are triggered and develop over time. Some of these generalizations confirm and sharpen observations that had previously emerged from typological research and, in particular, from the investigation of grammaticalization.

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I adopt a very general, theory-neutral definition of grammaticalization as "a process which may not only change a lexical into a grammatical item, but may also shift an item 'from a less grammatical to a more grammatical status' , in Kuryłowicz's words" (Lehmann 2015: 13).

Grammaticalization provides important insights to formal approaches to diachronic semantics. This is due, on the one hand, to the fact that grammaticalization phenomena follow systematic trajectories and, thus, disclose regularities and general mechanisms of language change. On the other hand, grammaticalization phenomena are multidimensional, in the sense that they involve various linguistic levels and require the simultaneous consideration of morphosyntactic, semantic and pragmatic factors.

Research on grammaticalization unanimously acknowledges the existence of systematicity in grammaticalization phenomena, although the evaluation of the forms and extent of such systematicity vary considerably across frameworks, and often involve a radical discussion of the notion of grammaticalization itself (cf. the contributions in Campbell 2001 (ed.) for discussion).

In typological research on grammaticalization, the way generalizations have been formulated is clearly influenced by the intrinsically multidimensional nature of grammaticalization phenomena: structural as well as semantic factors are encompassed, and often no clear-cut distinction is drawn between them. For formal approaches, this raises the question of how to distinguish which linguistic modules, and consequently which factors within them, are responsible for the observed regularities.

Structural factors have more readily lent themselves to individuation: Lehmann (2015) (whose first version appeared in 1982) singled out a number of paradigmatic and syntagmatic parameters of grammaticalization, and generative research uncovered recurrent mechanisms, such as the reanalysis of movement dependencies as local merge relations, or of phrasal elements as heads (cf. Roberts & Roussou 2003; van Gelderen 2004 for a comprehensive discussion).

A still open question concerns the possibility of singling out similar general mechanisms affecting the semantic component, in grammaticalization as well as in other phenomena, and of expressing them in a formal theory: Eckardt's (2006) seminal study has paved the way for this kind of research, which has already yielded significant results (cf. Eckardt 2012; Deo 2015; Gianollo et al. 2015 for an overview).

As has been the case with formal diachronic syntax, in order to reach an answer it is necessary to collect a consistent amount of cross-linguistic evidence by means of empirical research. The present study is an attempt in this direction:

my aim is to provide an analysis of the diachronic path followed by the Latin particle *nec* ('furthermore not'; 'neither'; 'not even') and its Romance continuations, and to compare the emerging generalizations about the involved semantic trajectory with those formulated with respect to the structural aspects of change. I analyze *nec* as a focus particle in all its functions, and I derive its different uses, and their diachronic distribution, from the way alternative meanings to the focus associate are computed and retrieved in context. I then propose that the format of the changes observed in this respect is comparable to Lehmann's (2015) syntagmatic parameters of grammaticalization, capturing this way important parallelisms between the syntactic and the semantic side of context-dependence.

The discussion in this chapter largely abstracts away from the broader debate on the nature of grammaticalization, and focuses on well-attested systematic diachronic tendencies, which I regard as part of a grammaticalization process (but remain empirically valid even if they are not considered specific to grammaticalization), and which are argued to affect in a parallel fashion the morphosyntactic and the semantic-pragmatic components.

The structure of the chapter is as follows: in Section 2 I provide a first description of the functions and of the diachronic development of *nec*, and I single out the reasons why I believe this case study to be particularly relevant for our more general understanding of semantic change. Section 3 is dedicated to a more in-depth analysis of the particle's various functions. In Section 4 an analysis of the steps involved in the grammaticalization path is provided. In Section 5 I compare the conclusions emerging from the case study to Lehmann's (2015) syntagmatic parameters for grammaticalization, showing the existence of clear correlations between structural and meaning change in grammaticalization, and I summarize the main conclusions reached.

2 Latin *nec* from discourse connector to uninterpretable feature

Thanks to the uninterrupted and rich documentation on Latin and its Romance descendants, it is possible to follow the history of *nec* for millennia and to see how this element developed multiple functions: some of them coexist since the most ancient texts, some others represent later developments; at least one of these functions is uniformly continued in Romance, whereas others were lost in all or in some Romance languages. Section 2.1 gives a first overview of these functions and of their diachronic distribution. Section 2.2 comments on the theoretical relevance of the case study.

2.1 A first overview

The etymology of the Latin particle *nec* is straightforward: it derives from the Indo-European negative morpheme **nĕ* and the enclitic conjunction *-que*, yielding *neque*.[1] The form *nec* is derived by apocope of the last syllable of *neque*: the two forms coexist and are functionally equivalent in Early and Classical Latin. For simplicity, I mostly refer to *nec* because it is the most pertinacious form from a diachronic point of view, *neque* becoming rarer in Late Latin texts and being continued in Romance only by Romanian.

The negative particle **nĕ* is continued in Latin only in univerbation with other elements. It yields negative indefinites, such as e.g. *nemo* 'nobody' (< *nĕ* + *homo* 'man'); *nullus* 'no' (< *nĕ* + *ullus* diminutive of 'one'). It is also at the core of the negative marker *nōn* 'not' (< *nĕ* + *oenum* 'one'), originating through a process of reinforcement (Fruyt 2008; Gianollo 2018), and of other connectors, such as e.g. *nisi* 'if not', *ne…quidem* 'neither, not even'. It also appears as negative morpheme in verbs, such as *nĕscio* 'ignore' (< *nĕ* + *scio* 'know'), *nolo* 'not-want' (< *nĕ* + *volo* 'want'), etc.[2]

The clitic conjunction *-que* is employed for the coordination of various types of constituents in Latin; its syntactic distribution is constrained by its postpositive nature, cf. (1).[3] The positive counterpart of *neque*/*nec* is represented by the pair *atque* / *ac* 'and (also)'.

(1) terra mari**que** 'on land and sea'
land:ABL see:ABL.and

The particle *nec* itself is found in combinations with other particles, yielding complex elements such as *necdum* '(and) not yet', *necne* 'or not', *necnon* 'and also, and

[1] The etymological facts are complicated only by the occurrence, in Archaic Latin, of *nec* in a usage that does not fall into the canonical functions of the particle and that disappears at later stages, namely the expression of plain sentential negation with no apparent correlative function. Scholars tend towards an explanation in terms of an etymologically different particle in these cases: Orlandini & Poccetti (2007: 29-30) defend a deictic origin, motivated as negation strengthening, for the element *-c* (<**ke*, cf. Latin *hic* 'this') in this archaic particle.

[2] The particle *nē* 'lest', the negation used a.o. in prohibitions and as negative complementizer in purpose clauses, has a different etymological origin, as evidenced by the long vowel that characterizes it. For discussion of its controversial etymology cf. de Vaan (2008).

[3] In the Latin examples, the glosses follow the Leipzig Glossing Rules and are limited to basic morphological information, for the sake of readability (case on nominals and number on verbs; for non-finite forms, information on mood is provided). The abbreviations for Latin authors and works follow the *Thesaurus Linguae Latinae* (http://www.thesaurus.badw.de/en/user-tools/index/) Texts are cited according to the editions in Brepols' electronic corpus *Library of Latin Texts - Series A* (http://www.brepolis.net).

yet' (the latter yielding a positive meaning in conformity to the Double Negation system of Latin).

Latin *nec* is a multifunctional element (Orlandini 2001; Orlandini & Poccetti 2007). Three main functions can be singled out:

(2) Functions of Latin *nec*
   a. (i) discourse-structuring connector 'and not'; 'furthermore, it is not the case that', at the beginning of new textual units;
   b. (ii) correlative particle 'neither'…'nor';
   c. (iii) stand-alone focus particle with an additive ('also not') or a scalar ('not even') interpretation.

The examples in (3-5) show *nec* in the functions listed in (2). Each function will be described in more detail in Section 2, where I will spell out the criteria for contextual disambiguation. For now, it is sufficient to remark that *nec* is always intrinsically negative. In the clearest examples that show its function as discourse-structuring connector, it performs a polarity switch with respect to a positive antecedent, cf. (3).

(3) (i) discourse-structuring connector
Accessum est ad Britanniam omnibus navibus meridiano fere
approached be:3SG to Britannia all:ABL ships:ABL midday:ABL around
tempore, **neque** in eo loco hostis est visus.
time:ABL, and.not in that place enemy:NOM be:3SG seen
'All ships got into Britain at around noon, **and no** enemy was spotted there.' (Caes. *Gall.* 5.8)

(4) (ii) correlative particle
nam postquam exercitui praeesse coeperat, **neque** terra
for after army:DAT command:INF start:3SG and.not land:ABL
neque mari hostes pares esse potuerant.
and.not sea:ABL enemy:NOM equal:NOM be:INF can:3PL
'And after he (Alcibiades) started to be the army commader, the enemies could not compete, neither by land nor by sea' (Nep. *Alc.* 6.2)

(5) (iii) stand-alone focus particle
Veteres quattuor omnino servavere per totidem mundi
ancient:NOM four altoghether observe:3PL for as.many world:GEN
partes - ideo **nec** Homerus plures nominat
part:ACC therefore and.not Homer:NOM more:ACC mention:3SG

> 'The ancients reckoned only four (winds) corresponding to the four parts of the world - and also Homer does not mention more' (Plin. *nat.* 2.119)

Functions (i) and (ii) are historically primary, and are attested since the beginning of the textual tradition. Their respective fate is quite different. Function (i) is not productively continued in Romance (although it shows some signs of retention in Old Romance, this usage is infelicitous in Modern Romance). Function (ii), instead, is continued by all Standard Romance languages (e.g. French and Spanish *ni*, Italian *né*, Romanian *nici*). As for function (iii), it is only sporadically attested in Early and Classical Latin, and gains in significance only later (1st cent. CE), first with an additive and then with a scalar meaning, which becomes very frequent in Late Latin (from the 3rd-4th cent. CE).

Function (iii) is continued to various degrees in Romance. As a focus particle, *nec* typically undergoes a cycle of reinforcement of the additive / scalar component: cf. e.g. Spanish *ni siquiera* 'not even' (originally: 'not even if you wish'),[4] Portuguese *nem mesmo* 'not even' (originally: 'not even itself'), Italian *neppure, neanche* 'neither, not even' (*ne-* + multifunctional particle *pure* 'also, though' or *anche* 'also'), Romanian *nici măcăr* 'not even' (originally: 'not even if you wish'); alternatively, it is substituted by another element (French *même pas* 'not even', originally 'itself not').

Function (iii) also motivates the employ of *nec* as negative morpheme in many newly grammaticalized Romance indefinites that become elements of Negative Concord (n-words), like e.g. Spanish *ninguno*, Portuguese *nenhum*, Old French *neuns*, Italian *nessuno* 'nobody'. In fact, if a Romance n-word is negatively marked, the negative morpheme always derives from *nec*.[5]

This latter outcome is indicated with (iv) in Table 1, which provides an overview of the diachronic distribution of the various functions. A further, pervasive change, which is omitted from the table for readability, concerns the reanalysis of the negative feature carried by *nec*, which is reanalyzed from a semantic feature [Neg] in Latin into a formal uninterpretable feature [uNeg], according to the general change from a Double Negation to a Negative Concord system from Latin to Old Romance (Gianollo 2018: chapters 4-5). The table just indicates that the newly grammaticalized indefinites containing *nec* are elements of Negative Concord (i.e., [uNeg] indefinites) since the beginning.

As exemplification of the Modern Romance outcomes, consider the data from

[4] Spanish *ni* can also be used by itself, without *siquiera*, cf. Aranovich (2006).

[5] For a more detailed analysis of the etymological origin of these indefinites, which sometimes contain further building blocks (e.g. *ipse* 'himself' in Italian *nessuno*) and vary in the retention of the velar component of *nec*, see Gianollo (2018: 225-228).

Table 1: *nec*: overview of the diachronic developments

Function		Latin	Old Romance	Mod. Romance
(i)	discourse connector	✓	receding	✗
(ii)	correlative particle	✓	✓	✓
(iii.a)	focus part. - additive	✓	✓ (reinforced)	✓ (reinforced)
(iii.b)	focus part. - scalar	✓	✓ (reinforced)	✓ (reinforced)
(iv)	morpheme of indef.	✗	✓ [uNeg]	✓ [uNeg]

Italian in (6): from a morphological point of view, Latin *nec* is most directly continued by the correlative particle *né* in Italian. This particle is unacceptable as discourse connector (function (i)). It is typically used in correlative structures (function (ii)), but cannot be used in function (ii) to join two clauses of different polarity, i.e. to perform a polarity switch, unlike what happens in Latin. For function (iii) the reinforced form *neanche* may be used as focus particle, and is ambiguous between and additive and a scalar reading.[6] Finally, a continuation of Latin *nec* is visible in the initial morpheme of the word for 'nobody', *nessuno*: in fact, the morphological makeup of the indefinite is not transparent for Modern Italian speakers, but the originally negative element can still be attributed the function of carrying a formal uninterpretable feature for negation, which allows it to enter Negative Concord (see further Section 4.5).

(6) Italian

a. (i) *discourse particle*
Maria è andata al supermercato. * **Né** ha ricordato di portare la borsa.
'Maria went to the supermarket. Né she remembered to bring the bag.'

b. (ii) *correlative particle*
Maria non ha comprato **né** il latte **né** il burro.
'Maria bought neither milk nor butter'

c. (iii) *focus particle*
Maria non ha comprato **neanche** i biscotti.

[6] For the additive value of *anche* cf. Franco et al. (2016); also further reinforced forms exist, e.g. *neppure*, *nemmeno*, whose diachronic development deserves to be studied more carefully in future research.

'Maria didn't buy cookies either' / 'Maria didn't even buy cookies'

d. (iv) *morpheme of indefinite*
Maria non ha fatto **ne**ssun progresso.
'Maria didn't make any progress'

2.2 Broader theoretical relevance of the case study

Table 1 gives us a first impression of the remarkable diachronic path followed by *nec*. We see it starting as an element operating on discourse units, and ending up as a word-internal component (a morpheme and eventually a functional feature). In the development from Latin to Romance, *nec* turns out to be diachronically pertinacious, but at the same time it undergoes a wide-ranging grammaticalization process affecting its multifunctionality. This process can be understood as a form of *functional enrichment* that 'depletes lexical items of their semantic and interpreted features and eventually reduces them to purely functional elements with only uninterpreted features' (Kiparsky 2015: 73). At the same time, however, we see some of the original functions coexisting with the newly developed ones.

The history of Latin *nec*, thus, raises a number of issues for our theoretical understanding of semantic change: how are the different functions related? What determines whether and how these functions coexist at a certain stage? Why are some functions lost and others newly developed? And does the shape of this grammaticalization process tell us something more general on possible formats of semantic change?

In the following sections I try to provide at least partial answers to these questions. First of all, I account for the multifunctionality of the particle: I analyze the functions of *nec* synchronically and diachronically, and, capitalizing on the bimorphemic nature (*ne-c*, *ne-que*) of the particle, I propose that, across functions, it shares a homogeneous internal syntactic structure, corresponding to its two basic semantic components: additivity and negation.

I further show how the various uses can be derived from the interaction between these two operators and the surrounding structure into which the particle is merged. The focus-sensitive nature of the particle, i.e. its sensitivity to alternatives, is held responsible for its multifunctionality: the structural position of the particle influences its pragmatic properties, in terms of the form of the evoked alternatives and the way they are retrieved.

On the one hand, the mechanism governing the retrieval of alternatives is involved in the development of a scalar reading for the particle (pragmatic enrichment), which is an intrinsic possibility for additive particles but seems to gain

ground in Latin only after a functional competitor, the particle *ne…quidem*, falls out of use.

On the other hand, increase in bondedness and decrease in syntagmatic variability witnessed in the diachrony of *nec* correlate with a change in the form taken by alternatives, which decrease in scope from discourse units to individual alternatives ordered on a scale. In the development of *nec* we see, thus, the semantic-pragmatic counterpart of Lehmann's syntagmatic parameters of grammaticalization, resulting in decrease or loss of discourse-dependence.

3 The functions of *nec*: Distribution

In this section we will have a closer look at the various functions of Latin *nec*. I will focus on data from Classical Latin (1st cent. BCE - 1st cent. CE), but occasionally also Late Latin data (3rd-4th cent. CE) will be taken into consideration, in order to show the functional extension that the particle undergoes already during the history of Latin. Note that, as seen in Section 2.1, the two forms of the particle, *neque* and *nec*, are functionally indistinguishable in the texts on which I base my conclusions.

3.1 Discourse-structuring connector

As a discourse-structuring connector, *nec* introduces a full clause belonging to a new discourse unit, which may be connected in the discourse to a previous clause independent of the polarity of the latter. Latin is a Double Negation language: each negatively marked element introduces a semantic negative operator, independently of its position in the clause (Gianollo 2016). The particle *neque* / *nec* conforms to this system and typically suffices to negate a clause (or a smaller constituent) by itself.

In (7) the clause preceding the one introduced by *neque* has positive polarity. The particle marks the subsequent one for negative polarity. The discourse function of the clause introduced by the particle is to bring forward the narration in a temporal progression: *neque* therefore connects two clauses expressing a coordinating discourse relation according to Asher (1993).

(7) Concurrunt equites inter se; **neque** vero primum
clash:3PL knight:NOM between REFL:ACC and.not indeed first:ACC
impetum nostrorum Numidae ferre potuerunt, sed
impact:ACC our:GEN Numidian:NOM resist:INF can:3PL but

interfectis circiter CXX reliqui se in castra ad
killed:ABL around 120 remaining:NOM REFL:ACC in camp:ACC towards
oppidum receperunt
city:ACC withdraw:3PL
'The respective cavalries clashed, but the Numidians were not able to withstand the initial impact of our men. Instead, after about a hundred and twenty were killed, the rest withdrew into the camp next to the city.' (Caes. *civ.* 2.25)

In some cases the demarcation between the two discourse units is even sharper, and is highlighted by modern editors through the insertion of specific punctuation or even paragraph breaks, as in (8). Often a contrastive flavor is present, also because of accompanying particles (*vero* 'in fact', *tamen* 'however'), as in both (7) and (8).

(8) [7.4] Qua ex re creverat cum fama tum
which:ABL from thing:ABL grow:3SG and reputation:ABL and
opibus, magnamque amicitiam sibi cum quibusdam
power:ABL close:ACC friendship:ACC REFL:DAT with certain:ABL
regibus Threciae pepererat. [8.1] **Neque** tamen a caritate
king:ABL Thracia:GEN procure:3SG and.not however from love:ABL
patriae potuit recedere.
fatherland:GEN can:3SG recede:INF
'Because of this he (Alcibiades) grew in reputation and power, and he procured close friendships with certain Thracian kings. Nonetheless he could never abandon the love for his own country' (Nep. *Alc.* 7.4-8.1)

As a discourse particle, *nec* does not impose any constraint on the polarity of the previous unit, therefore it can perform a polarity switch. This possibility is still attested for *né* in Old Italian (9a), but is lost in Modern Italian (9b; cf. also 6a), cf. Zanuttini (2010) for Old Italian, and Doetjes (2005) for similar Old French uses:[7]

(9) a. e perció in mezzo della via l'uccise; **né** Catone **non** avea
and thus in middle of.the road him.killed and.not Cato not had

[7] The example in (9a) is a strict Negative Concord structure, where negation is expressed both on the particle *né* and on the negative marker *non*, yielding a single-negation reading. Similar structures are not grammatical in Modern Italian, but are in line with the grammar of Old Italian, which allowed for strict Negative Concord under some conditions (Garzonio 2018, Gianollo 2018: chapter 5).

podere di difenderlo
faculty of defend.him
'and thus he killed him in the middle of the road; and Catone did not have the faculty of defending him' (Old Italian, Brunetto Latini *Rett.* p. 115 l. 9-10)

b. *Francesco è andato a mensa **né** Giovanni lo ha
Francesco is gone to mensa and.not Giovanni him has
accompagnato
accompanied
'Francesco went to the mensa and Giovanni did not go with him' (Modern Italian)

The impossibility for Italian *né* to perform a polarity switch amounts, in my framework, to the loss of the discourse-structuring function for the particle derived from *nec* in this language (as in the rest of Romance). The same-polarity requirement between the two discourse units, emerging in its diachronic development, results in a usage that is hardly distinguishable from the correlative one (where the conjuncts are subject to stricter parallelism constraints, encompassing polarity).

3.2 Correlative negation

As correlative negation, *nec* co-occurs with another instance of *nec* or another negative element (e.g. the negative marker *non* or a negative indefinite) in the same syntactically complex discourse unit. Each negative element contributes a semantic negative operator, in compliance with the Double Negation nature of Latin: two or more propositions are at the same time coordinated and negated. In this use, *nec* can introduce clauses or smaller syntactic constituents.

Coordination of full-fledged clauses by means of correlative *nec* can be seen in the two passages in (10), respectively with main and with subordinate clauses:

(10) a. **nec** satis exaudibam, **nec** sermonis fallebar
and.not enough hear:1SG and.not conversation:GEN miss:1SG.PASS
tamen, quae loquerentur
though which:NOM speak:3PL.PASS
'I couldn't hear perfectly what was being said, but I didn't miss the general drift of their conversation' (Plaut. *Epid.* 239-240)

b. animus autem solus **nec** cum adest **nec**
soul:NOM however alone:NOM and.not when be.present:3SG ad.not
cum discessit apparet
when depart:3SG appear:3SG
'only the soul remains unseen, both when it is present and when it departs' (Cic. *Cato* 80)

Often, *nec* apparently coordinates non-clausal constituents (cf. 11); however, in Section 4.3 we will see how in fact these structures can be analyzed as cases of ellipsis affecting clausal constituents.

(11) **neque** enim obscuris personis **nec** parvis in causis
and.not indeed obscure:ABL character:ABL and.not small:ABL in issue:ABL
res agetur
situation:NOM develop:3SG.PASS
'for the persons involved are not obscure, nor are the issues trivial' (Cic. *fam.* 3.5.2)

In Latin the particles introducing each of the coordinated element can be identical, like in the Romance languages and unlike in many other languages (e.g. English *neither…nor*, German *weder…noch*; cf. Bernini & Ramat 1996: 100-106 and Haspelmath 2007 for a typological overview). However, in Latin different negative elements correlating with *nec* are possible as well, cf. (12):[8]

(12) branchiae **non** sunt ballaenis **nec** delphinis
gill:NOM not be:3PL whale:DAT and.not dolphin:DAT
'neither whales nor dolphins have gills' (Plin. *nat.* 9.19)

Examples (10-11) are characterized by syntactic parallelism between the coordinated constituents, which also encompasses their (negative) polarity. However, there are also cases where polarity switch between conjuncts is attested, as in (13), similarly to what we saw with the discourse-structuring connector:

(13) eius enim nomine, optimi viri **nec** tibi
he:GEN in.fact name:ABL excellent:GEN man:GEN and.not you:DAT
ignoti, maledicebat tibi
unknown:GEN slander:3SG you:DAT
'he slandered you under the name of this man, a excellent person and not unknown to you' (Cic. *Deiot.* 33, from Pinkster 2015: 688)

[8] As an anonymous reviewer remarks, these examples often have the flavor of an afterthought: 'Whales don't have gills, and dolphins don't have them either'.

Polarity switch uses are often employed to create rhetorical effects: *nec ignotus* in (13), where the adjective is marked by the negative prefix *in-*, yields a litotes, in a structure of 'asymmetric coordination' that is known as 'epitaxis' and is used to add parenthetical comments (cf. Orlandini & Poccetti 2007 and references cited there).

In many cases of polarity switch a contrastive flavor can be detected, and in these contexts it is not easy to tell apart the discourse-structuring connector use from the correlative use: in annotating the examples, I decided for the latter when the correlated constituents are built in a syntactically parallel way, since this contextual condition ensures by itself cohesion among correlates, with no need for the particle to create such cohesion itself, as is instead the case with the discourse-structuring connector (see Orlandini & Poccetti 2007 for further discussion).

3.3 Focus particle

In the stand-alone focus-particle use, no direct correlation with other negative constituents is present; rather, the particle attaches to a sub-clausal constituent (in the clearest cases, to a nominal element), and finds its antecedent not in a syntactically parallel structure, but in the broader discourse context. The particle requires for its interpretation that at least one alternative to the constituent in focus holds in the context (additive interpretation). In later texts a scalar reading emerges, which is typically dependent on general world knowledge (providing the scalar alternatives), rather than on specific contextual conditions.

In (14), *nec* attaches to the nominal phrase *cuniculos* 'rabbits'. The previous context provides the alternative: the land of Ebusus (Ibiza) is known for driving away snakes; a further blessing of this land is that it does not produce rabbits, which can compromise the harvest:

(14) **nec** cuniculos Ebusus gignit, populantes
and.not rabbit:ACC Ebusus:NOM generate:3SG destroy:PART.NOM
Baliarium messes
Balearic:GEN harvest:ACC
'Ebusus (the island of Ibiza) neither generates rabbits, which destroy the harvests of the Balearic islands' (Plin. *nat.* 3.78)

In (15), the focus associate is the nominal *Sirenes* 'sirens': here Pliny is discussing birds and is discarding a series of fabulous birds that were mentioned by previous authors; these birds represent the contextually provided alternative set to the focus associate introduced by *nec*. After saying that he considers birds like *pegasi*

and gryphons as invented (*fabulosos reor* 'I consider them legendary'), Pliny adds a comment expressing similar scepticism about sirens:

(15) **nec** Sirenes impetraverint fidem
and.not siren:NOM obtain:3PL credit:ACC
'Also the sirens cannot obtain great credit with me' (Plin. *nat.* 10.136)

Cases where the element in focus is not a nominal sub-constituent of the clause, but the whole predication, are more difficult to distinguish from the correlative use, since typically the previous clause directly provides a symmetric alternative, which could be interpreted as a first conjunct. For instance, (16) seems an intermediate case:

(16) quoniam hoc solum animal ex marinis **non** percutiat,
since this:ACC only:ACC animal:ACC from marine:ABL not strike:3SG
sicut **nec** e volucribus aquilam
as and.not from bird:ABL eagle:ACC
'since this is the only animal, among the marine ones, which it (the thunder) never strikes; similarly, neither (it strikes) the eagle, among birds' (Plin. *nat.* 2.146)

It seems that the use as stand-alone focus particle is closely related to the correlative one, but emerges in cases where the syntactic parallelism among alternatives is not obvious. This could of course have had a role in providing bridging contexts (in the sense of Heine 2002) during the diachronic development, since the focus particle function is attested later than the discourse-structuring and correlative one.

The use as focus particle is encountered very rarely in Early and Classical Latin texts, and becomes more frequent only from the Imperial age (1st. cent. CE) on. Apart from sporadic attestations in early documentation (typically in cases where *nec* is accompanied by *saltem* 'at least'), the scalar reading of the focus particle emerges even later, in texts dating to the 3rd-4th century CE. Due to the peculiarities of the Latin documentation, it is difficult to assess whether the focus particle use was a feature of the spoken language, which has a late attestation in our documents only due to prescriptive control during the Classical stage. What emerges quite clearly, though, is that the increase in the use of *nec* as focus particle correlates with the decrease of its main competitor in this function, the discontinuous particle *ne…quidem* 'neither', 'not even' (see Orlandini 2001: chapter 7, Gianollo 2017 for the functions of this particle and the possible causes for its demise).

An example of *nec* with a scalar intepretation is given in (17):

(17) dico autem vobis quoniam **nec** Salomon in omni
say:1SG yet you:DAT that and.not Salomon:NOM in all:ABL
gloria sua coopertus est sicut unum ex istis
splendor:ABL his:ABL dressed:PT be:3SG as one:NOM from this:ABL
'Yet I tell you that not even Solomon in all his splendor was dressed like one of these' (Vulg. *Matth.* 6.29)

Note that Spanish, unlike other Romance languages, can still reproduce this use with *ni*, the continuation of *nec*:

(18) Spanish translation of (17) (Nueva Biblia)
Pero les digo que **ni** Salomón en toda su gloria se vistió como uno de ellos.

Many of the negative scalar focus particles seen in Indo-European languages also have an employ as correlative negation (cf. König 1991: chapter 4, Haspelmath 2007). As seen in Section 2.1, Romance languages typically use reinforced forms of the correlative particle in this function, pointing to a cyclical development in which the additive / scalar additive component is formally renewed.

3.4 Combination with 'one'

The function of *nec* as scalar focus particle that develops in Late Latin is at the core of its further development into a negative morpheme in the new Romance n-words (i.e., elements of Negative Concord). The combination of *nec* with the scalar endpoint represented by the cardinal numeral *unus* 'one' emerges in Late Latin as one of the ways to express emphatic negation. An example from a Christian author of the 5th century CE is given in (19):

(19) Quaesivi consolantem, et non inveni; tot milia
look.for:1SG comforter:ACC and not find:1SG; so.many thousand:NOM
saturati, tot milia salvati, infiniti
sated:NOM so.many thousand:NOM saved:NOM endless:NOM
edocti et **nec** **unus** inventus est mihi
instructed:NOM and and.not. one:NOM found:PART.NOM be:3SG me:DAT
consolator
comforter:NOM
'I looked for someone to comfort me, and I did not find him; so many thousands of them sated, so many thousands of them saved, endless ones

instructed and not one comforter for me has been found' (Arnob. Iun. *in psalm.* 68.35)

It is very interesting to remark that in (19) *nec* co-occurs with the conjunction *et*, showing clearly that the particle in this use has lost its correlative function.

Another interesting fact observed in Late Latin texts is that sometimes, in less controlled registers, the use of the combination *nec unus* co-occurs with a further marker of negation in a single-negation reading (as in 20). These structures can be interpreted as a sign of the ongoing development of Negative Concord.

(20) et de electis israhel **non** dissonuit **nec unus**
and from chosen:ABL Israel:GEN not be.dissonant:3SG and.not one
'and of the chosen ones of Israel not even one was dissonant' (Aug. *loc. hept.* 2.102)

Once the change from the Latin Double Negation system to the Romance Negative Concord ones is completed, we see the resulting indefinites, which have emerged through a process of univerbation (e.g. Portuguese *nenhum*, Spanish *ninguno*, Italian *nessuno*, Old French *neuns*, etc.), behave as n-words, i.e. as indefinites that can both express negation by themselves and co-occur with other negative elements in a single-negation reading. Romance n-words do not necessarily contain *nec* as its building block (cf. Spanish *nada*, French *personne*), but if they do contain a negative morpheme, this morpheme is invariably derived from Latin *nec*. This pan-Romance phenomenon hints at a pervasive use of the combination of *nec* and *unus* in the Late Latin varieties from which the Romance languages derive.

4 The functions of *nec*: analysis

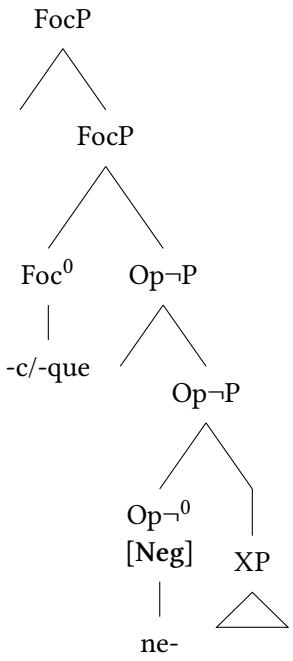
In the previous section I traced the evolution of a discourse-structuring particle into the building block of new emphatic (scalar) indefinites, which in Romance behave as elements of Negative Concord. The task of the present section is to provide an analysis of the functions of *nec* that accounts for the particle's multifunctionality in a parsimonious way, i.e., by assuming a common semantic and structural core and by deriving the various functions as an effect of contextual factors, either at the synchronic level (in the case of simultaneous availability of multiple functions) or at the diachronic level (in the case of reanalysis). The starting observation is the following: in all the functions surveyed above, *nec* contributes, besides negation, an additive component, whereby alternatives are provided by the broader surrounding discourse or by more local antecedents.

4.1 The common core

The two basic semantic components of *nec*, additivity and negation, correspond to the two morphemes into which the particle can be analyzed: the negative morpheme *ne-* and the additive morpheme *-que* / *-c*. Assuming the two morphemes to be heads of their respective syntactic projection, I propose that *nec* is a syntactically complex lexical item, whose internal structure stays the same in all functions: it consists of the projection of a negative operator Op¬P, topped by the projection of an additive focus operator FocP (see Gianollo 2017 for a first version of this proposal).

The resulting structure is shown in (21). In (21), Op¬P is the syntactic projection of [Neg], the semantic feature proposed by Zeijlstra (2004; 2014) to characterize intrinsically negative items in Double Negation systems. The projection of Op¬P amounts to the instruction 'Insert operator' for the interface, and has no further role in the syntactic computation (i.e., it does not enter into syntactic dependencies).

(21) Structure for *něc* in all its functions



Please check and confirm tree

The FocP projection has a basic additive meaning: I adopt a presuppositional analysis, and assume accordingly that the particle contributes the presupposition that the predication about the element in focus p also holds of at least one of its alternatives q in context C:

(22) presuppositional analysis for additive particles
also p:
(1) p
(2) presupposition: $\exists\, q \in \mathrm{C} \wedge q \neq p$

Polarity switch cases, where the negative polarity of the conjunct introduced by *nec* contrasts with the positive polarity of the antecedent conjunct, show that the negative operator contributed by *nec* only takes scope over the conjunct directly introduced by the particle. That is, the additive component outscopes the negation (Additive Focus > Negation).

Now, the surface order of the two elements in *neque*/*nec* is the mirror image of their scope relation. The reason resides in prosodic facts governing the distribution of enclitic *-que*/*-c*, and more in general word formation in Latin. Enclitic *-que* is phonologically defective; it is a syntactic head but it is not a phonological word, thus it does not properly align a phonological word with a syntactic head (Agbayani & Golston 2010). As a repair strategy, *ne-* is raised to the superordinate head (prosodic inversion); *ne-* is itself proclitic: together, the two elements form a prosodically acceptable unit for Latin.

FocP and Op¬P are syncategorematic functional shells: they do not select for a specific category, thus they may attach to elements of various semantic types and of different constituency; the focus associates remain transparent for c-selection (cf. Cinque 1999: 120-126 for the status of negation in this respect, and Biberauer et al. 2014: 199-203 for conjunctions and other particles).

Because of its focus-sensitivity, *nec* requires the consideration of alternatives in order to be interpreted. Following Katzir (2007); Fox & Katzir (2011), I assume the generation of focus alternatives to be structure-based: alternatives are obtained by replacing the focused constituent with constituents that are at most as complex as the element in focus. The nature of alternatives therefore depends on the type of the constituent *nec* combines with. This naturally yields varying meaning effects in the case of a syncategorematic particle like *nec*.

The basic intuition on which my analysis rests is that the various functions of *nec* emerge from the interaction of the particle with the surrounding context (both in discourse and in structural terms). As is routinely assumed, contextual interaction determines how the alternatives to the ordinary semantic value are

retrieved: alternatives exploited for the interpretation of *nec* may be represented by preceding discourse units, in the case of the discourse-structuring function, or more locally by preceding clauses within the same discourse unit (sentence topic), in the case of the correlative function. In the stand-alone use as focus particle, no strict syntactic parallelism is required: the additive reading is dependent on the anaphoric retrieval of a suitable discourse referent in the broader discourse context; the scalar reading emerges when such anaphoric link cannot be established and the alternatives are provided by a scale instead.

In what follows, I more closely review the contextual factors that trigger the various functions of *nec*.

4.2 Discourse-structuring connector

In accordance with the structure-based mechanism of generation of alternatives, I propose that as a discourse-structuring connector *nec* 'furthermore not' takes a whole discourse unit as its complement. I tentatively assume that the highest projection above the CP is a DIS(course) projection (Giorgi 2015) where (some) discourse relations are syntactically represented, and that this projection is taken by the particle as one of its arguments.

The specifier of the additive Focus projection contains a phonetically null propositional anaphor, which represents the other argument of the operator expressed by *nec*. The silent anaphor ensures discourse cohesion by connecting the newly introduced clause to the previous context, thus satisfying the additive presupposition of the particle. A null propositional anaphor is similarly assumed by Poletto (2014: 22-27) in her analysis of Old Italian *e* 'and, thus' as discourse particle, and by Ahn (2015) in her analysis of *too* and *either* (cf. also Beck 2006 for the structural representation of an anaphoric element in the presupposition of *again*).

In my analysis, thus, discourse-structuring *nec* is considered as a focus particle operating at the discourse level. The salient alternative satisfying the additive presupposition is a previous discourse unit. No polarity requirement is imposed on it.[9]

Sentences introduced by *nec* in its use as discourse particle are never discourse-initial. In this, *nec* recalls the behavior of so-called one-place *and*, an adverbial

[9] I leave aside the issue of how to properly derive the interpretation of negation with discourse-structuring *nec*: although it surfaces high in the structure (discourse- and sentence-initially), the negation is interpreted as plain propositional negation, i.e. it operates at the propositional level, unlike some known cases of 'high negation' with a denial interpretation, operating beyond the propositional level.

connector according to Zeevat & Jasinskaja (2007):

(23) one-place *and*:
And John gave him a push (Zeevat & Jasinskaja 2007: their ex. 7)

Discourse-structuring *nec* introduces coordinating discourse relations (List, Narration, Result): like *and*, *nec* is used when 'the sentence topic of the pivot is abandoned to start dealing with a new topic' (Zeevat & Jasinskaja 2007: 325); one-place *and* 'seems to mark a distinct sentence topic under the continued discourse topic' (Zeevat & Jasinskaja 2007: 325). In (3) the general discourse topic is represented by the Romans' expedition in Britain; the sentence topic of the first clause is the arrival, the sentence topic of the second clause, introduced by *nec*, is the result of the first patrol. In (7) the general discourse topic is the battle; the sentence topic of the first clause is the clash between the cavalries; the sentence topic of the following clause, introduced by *neque*, is the result of the confrontation.

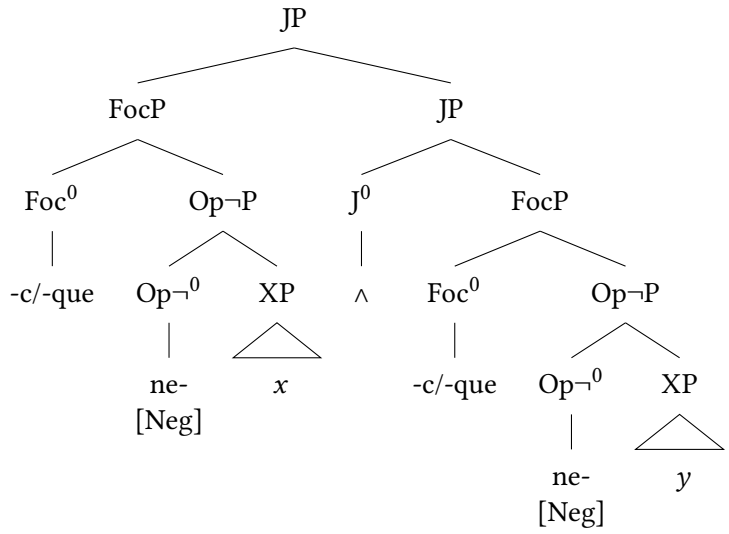
The fact that the units connected by *nec* share the same discourse topic shows that *nec* obeys the condition of 'shared topicality' on additive particles discussed for *too* in Schwenter & Waltereit (2010). At the same time, discourse-structuring *nec* introduces a distinctness requirement (cf. 22), leading to an update of the Common Ground.

4.3 Correlative negation

The common structural and semantic core proposed for *nec* in (21) can be maintained for correlative *nec* once also in this occurrence the particle is analyzed as focus-sensitive. Correlative particles have been accounted for as focus-sensitive particles in a number of works: Hendriks (2004), followed by den Dikken (2006), proposes this analysis for English *either*, *neither*, *both*. Similarly, Wurmbrand (2008) treats *nor* in correlative structures as composed by an additive focus particle and a negation.

I thus analyze correlative *nec* as a focus particle introducing each of the conjuncts; in other words, also in the correlative function the morpheme *-que*/*-c* realizes an additive Focus operator, not a conjunction. Correlation between the conjuncts introduced by *nec* is analyzed as asyndetic coordination, adopting the structure for 'edge coordination' ('not only…but also') proposed by Bianchi & Zamparelli (2004). In the structure in (24), JP stands for Junction Phrase (cf. Munn 1993; den Dikken 2006; Szabolcsi 2013; Mitrović & Sauerland 2014), the structure responsible for the coordination, whose null head hosts the conjunction operator.

(24) Syntax of correlation by *nec*



Please check and confirm tree

Differently from the discourse-structuring function, the sentence topic does not change across conjuncts. Moreover, the conjuncts in correlative structures are subject to a parallelism constraint: they are parallel in terms of their organization into foreground and background (i.e., they have parallel foci, cf. König 1991: 64) and, as we observed in Section 3.2, they are also parallel in terms of their syntactic structure.

That is, in the case of correlative negation, alternatives are provided locally by the correlative construction itself, and originate from the substitution of a sub-constituent of the clause, i.e. the element in focus. In the correlative construction it is particularly clear that the alternatives relevant for the interpretation are generated structurally and obey the complexity constraint discussed by Katzir (2007); Fox & Katzir (2011).

The parallel syntactic construction and the pragmatic role of focus are the factors licensing ellipsis within the conjuncts. In fact, correlates are arguably always propositional units, reduced by ellipsis; a proper treatment of the association of the semantic operators involved must eventually lead to such an analysis. For instance, TP-ellipsis would be involved in cases like (11), thus only apparently an instance of constituent negation, as shown in (25):

(25) cf. (11), Cic. *fam.* 3.5.2:

neque enim obscuris personis [$_{TP}$ ~~res~~
and.not indeed obscure:ABL character:ABL situation:NOM
~~agetur~~] **nec** parvis in causis res
develop:3SG.PASS and.not small:ABL in issue:ABL situation:NOM
agetur
develop:3SG.PASS
'for the persons involved are not obscure, nor are the issues trivial'

Crucially, parallelism seems to extend to the polarity value of the conjunct, at least in the most obvious cases of correlation. Syntactically, this means that the complement of *nec* must be at least a Polarity Phrase. Same-polarity requirements have often been observed for polarity particles (cf. Wurmbrand 2008: 519-520 for *nor*); they are also well known for being subject to diachronic change (cf. the observations on *nor* at earlier stages of English in Jespersen 1917: 114). They are usually treated as an additional presupposition encoded in the particle's lexical entry. It is not clear whether this would be the right analysis for Latin, though, since, as seen in Section 3.2, exceptions to the same-polarity requirement do arise in examples where *nec* has a special rhetorical effect. An alternative hypothesis, safeguarding the correspondence between the lexical entry of the discourse-structuring connector and of the correlative particle, would be not to incorporate the same-polarity presupposition in the lexical entry and to admit that correlative *nec* may express two different relations, Parallel or Contrast, in the sense of Asher (1993). With Parallel alternatives are required to be of the same (negative) polarity, whereas with Contrast the polarity switch is at the core of the Contrast relation itself.

The incorporation of the same-polarity presupposition into the lexical entry may represent a later diachronic step, correlating with the general loss of polarity-switch uses, as we saw for Italian in (9a-9b).

4.4 Focus particle

Since I treated correlative *nec* as a focus particle, the assumption that the stand-alone particle is structurally identical to the correlative particle naturally follows. The only difference concerns the syntactic context in which they are used: the stand-alone focus particle does not have an immediate overt syntactic correlate. Rather, it finds its alternatives in the broader contexts. In this, it is more similar to the discourse-structuring use; however, the form of the alternative(s) differs: while in the discourse-structuring use alternatives are provided by discourse units, in the focus-particle use alternatives are typically represented by

propositional alternatives. For example, in (14), the proposition 'Ebusus does not generate rabbits' is interpreted in the context of its anaphorically available alternative 'Ebusus drives away snakes'.

I assume that this use is in principle always available for a correlative focus particle in virtue of its meaning, but that it may be blocked in some languages by the presence of a more suitable competitor. In Latin such a competitor is represented by the discontinuous particle *ne…quidem*. In Late Latin this particle loses productivity, thus opening an additional functional space for *nec* through loss of lexical blocking.

The ambiguity between an additive and a scalar reading for focus particles is cross-linguistically frequent (cf. König 1991: 158-159, Gast & van der Auwera 2011: 24-25): it is observed, for instance, with German *auch* and Italian *anche*, as shown in (26).

(26) a. German (König 1991: 62)
Auch Riesen haben klein angefangen

'Even giants started from small beginnings' (*auch* = *sogar*)

b. Italian
Anche i giganti hanno iniziato in piccolo

'Even giants started from small beginnings' (*anche* = *perfino*)

The way alternatives are retrieved and the form the alternative set takes determine whether the reading for the particle is additive or scalar. In the scalar reading, alternatives ordered along a scale are evoked; the focus denotation is then the extreme of the scale. In the additive reading, instead, alternatives come in an unstructured set. Under the scalar reading, *nec* corresponds to the negative counterpart of *even*, whose contribution is schematically represented in (27), to be compared with (22):

(27) presuppositional analysis for scalar particles:
even p:
(1) p
(2) presupposition: $\forall q \in C\ [q \neq p \rightarrow p <_{\mu} q]$
(3) alternatives come in an ordered set, where μ: contextually determined probability measure

Also in this case I adopt a presuppositional analysis, whereby scalarity originates from the presupposition that the alternative being predicated is striking with re-

spect to some contextually established scale; in (27) I adopt a probability measure, but a scale of informational or pragmatic strength (cf. Gast & van der Auwera 2011 for discussion) would work equally well for my purposes. A more fundamental assumption concerns my choice of a scope-based analysis for *even* to account for the reading obtained when it interacts with negation.[10] The focus operator always takes wide scope with respect to the negative operator. This way scale reversal, operated by negation, obtains before focus applies, satisfying the scalar presupposition of the particle in situations where the complement of *nec* denotes the most probable (i.e., less striking) element to obtain (as is the case with minimizers or generalizers). In its scalar reading, *nec* means 'even [not x]': it is even the case that the most probable alternative does not hold.

As discussed in Section 3.3, the scalar reading emerges later than the additive one, pointing to the fact that a reanalysis takes place, whereby the lexical entry of the focus particle is enriched by the scalar presupposition (a form of pragmatic enrichment in the sense of Traugott & Dasher 2002). This would motivate the observed divergence between the fate of the correlative particle (continued by all Romance languages), and the fate of the scalar particle, which often undergoes reinforcement or lexical substitution.

To explain how a scalar reading for *nec* emerges and subsequently becomes conventionalized, it is important to consider the different way in which alternatives are retrieved in the additive reading and in the scalar reading. This, in turn, influences the structure that the set of alternatives has, as has been shown for Italian *neanche* 'also' by Tovena (2006). The use as additive focus particle is possible only when suitable alternatives for the element in focus are explicitly provided in the context. This happens by means of correlation in the correlative use, and by anaphoric linking to an element in the broader previous discourse in the stand-alone focus particle use. No accommodation is possible (Zeevat 1992 and following): the alternative has to be explicitly available in the conversational background, and this explains why additive particles out of the blue are infelicitous:

(28) # John had dinner in New York **too**

That is, additive particles are strictly anaphoric and the lack of a proper antecedent leads to presupposition failure: presupposition accommodation with additive operators is impossible or highly restricted.

[10] For the debate on this issue and alternative, ambiguity-based analysis cf. Rooth (1985) and the recent proposal by Collins (2016).

In the absence of these preconditions, only a scalar interpretation is possible: in that case alternatives can be accommodated by evoking a scale, whose dimension is usually suggested by the element in focus: in (17), 'Solomon', the element in focus, suggests a scale of people likely to be splendidly dressed: a king is the most probable option on this scale.

Tovena (2006) shows that this mechanism of accommodation regularly takes place with It. *neanche*.[11] A process of presupposition accommodation by means of scale retrieval may have been responsible for the conventionalization of a scalar meaning for *nec*: hearer-based accommodation processes are costly and they have been argued to be a frequent trigger to processes of reanalysis driven by economy considerations (Traugott & Dasher 2002; Eckardt 2006, Schwenter & Waltereit 2010). It is plausible to assume that, once the competitor *ne…quidem* lost ground and the employ of *nec* as focus particle became more frequent in Late Latin, the scalar reading originally resulting from accommodation may have ended up being conventionalized, by incorporating a scalar presupposition into the lexical entry of *nec*.

4.5 Combination with 'one': the *nec*-words

The last step in the development of *nec* is represented by its recruitment as a morpheme of the newly created narrow-scope indefinites that I dubbed '*nec*-words' in previous work (Gianollo 2018: chapter 5). While these elements appear to be fully grammaticalized in the earliest Romance documents, in Late Latin we encounter, with increasing frequency, their syntactic source: this has to be identified in structures like (19-20), where *nec* syntactically combines with the cardinal numeral *unus* 'one'.

The frequent scalar use of Late Latin *nec* renders the particle a suitable item to strengthen negation, according to a crosslinguistically frequent pattern which witnesses 'even' as a component of polarity-sensitive quantificational expressions (Haspelmath 1997; Lahiri 1998; Watanabe 2004; Chierchia 2013).Therefore, this last step of the grammaticalization process finds its prerequisite in the expansion of scalar uses for *nec* in Late Latin. Being a natural scalar endpoint, *unus* 'one' represents an optimal strengthening strategy: it is logically entailed by all its alternatives, but, thanks to scale reversal under negation, it yields the most unlikely, informationally strongest proposition.

On the basis of Lahiri's (1998) analysis of Hindi *ek bhii* 'one-even', the meaning

[11] But see Umbach (2012) for the fact that not all scalar additives allow for accommodation, cf. Germ. *noch*.

of emphatic 'even-one' NPIs is formalized by Chierchia (2013: 156) as follows, using the probability measure already seen in (27):

(29) a. 'even-one' NPIs, adapted from Chierchia (2013: 156):
$\lambda P \lambda Q\ \exists x\ [one(x) \wedge P(x) \wedge Q(x)]$
$\|one\|^{\sigma-ALT} = \{\lambda P \lambda Q\ \exists x\ [n(x) \wedge P(x) \wedge Q(x)]\ :\ n \geq one\}$
b. $E_{ALT}(p) = p \wedge \forall q \in ALT[p <_{\mu} q]$

The scalar alternatives (σ) of *one* are strictly ordered; given the shape of the alternatives, in Chierchia's framework their exhaustification has to take place by means of the *E* operator, which corresponds to the meaning of 'even'. The result is felicitous only in NPI-licensing contexts.

The Romance version of the indefinite contains, in addition, a negative morpheme, which I take to receive narrow scope with respect to the scalar focus operator.

In Romance, new indefinites formed with *nec* appear invariably as elements of Negative Concord grammars, i.e. as n-words.[12] According to a prominent line of analysis (Zeijlstra 2004; 2014, Penka 2011), n-words are analyzed as bearers of a formal uninterpretable negative feature [uNeg], whose function is to trigger Agree operations, which result in the creation of syntactic dependencies.

Once the indefinite behaves as an n-word, it is clear that *ne(c)* has become an uninterpretable feature: it does not directly contribute a semantically interpretable negative operator, but only a morphosyntactic signal to insert one in the further derivation. Moreover, it is clear from the Early Romance data that the focus contribution has disappeared already at that stage: the *nec*-words behave as plain existentials and do not contribute scalarity.

When *nec* is grammaticalized as the component of an indefinite, the change involves a restriction in the particle's possibilities to select a focus semantic value: consequently, the alternatives must now be lexically selected by the predicate determining the restriction of the quantification (cf. discussion in Lahiri 1998, Chierchia 2013).

According to Chierchia (2013: 156-157), this explains why a sentence like (30) is ungrammatical in Hindi (where the focus particle is a morphological component of the indefinite *ek bhii* 'even one'), unlike its English counterpart:

(30) from Chierchia (2013: 156-157)

[12] These indefinites also show negative-polarity uses, where they have a 'positive' meaning in NPI-licensing contexts. I refer to Gianollo (2018: chapter 5) and the literature cited there for attempts to reconcile these uses with the n-word analysis.

a. ***ek bhii** aadmii aayaa 'Any (=Even one) man came'
one even man came
b. **Even one** man came

According to Chierchia, because of the univerbation, in Hindi alternatives are strictly specified by the lexical content of the nominal restriction: therefore, in (30.a) they are lexically restricted to be men. This yields infelicity in an upward-entailing context, because a contradiction arises between the presupposition of the focus particle that the associate be the informationally strongest proposition and the fact that the lexically constrained alternatives ('two men came', 'three men came') are actually informationally stronger. In English, instead, alternatives are not lexically constrained: depending on the broader context, it is in principle possible to evoke a scale of alternative denotations to the element in focus, comprising less striking alternatives ('a woman came', 'a child came'); this way, the presupposition of *even* can be satisfied.

Assuming that an analogous mechanism is universally forced by univerbation, I conclude that the same applies to Latin *nec*-words, resulting in a maximal degree of bondedness of the particle and, consequently, in a context-independent, lexically restricted generation of alternatives.

5 Conclusions: the grammaticalization path

In this final section I compare the conclusions emerging from the study of *nec* to the syntagmatic parameters for grammaticalization formulated by Lehmann (2015), with the aim of ascertaining whether what we learn from the diachrony of *nec* can provide generalizations on the nature of semantic change similar to those proposed for syntactic change.

Lehmann's (2015: 129-134; 152-170) syntagmatic parameters of grammaticalization capture the main effects of grammaticalization processes at the syntactic level. They are listed in (31):

(31) Lehmann's (2015: 152-170) syntagmatic parameters of grammaticalization
a. *structural scope*: the structural size of the construction which a grammatical item interacts with (Lehmann: 'helps to form'); it decreases during grammaticalization;
b. *bondedness*: syntagmatic cohesion to another sign, varying from 'juxtaposition' to merger; it increases during grammaticalization;

c. *syntagmatic variability*: degree of variation in combination, positioning, and syntactic dependence with respect to other phrases; it decreases during grammaticalization.

These syntactic parameters appear to have an interpretational correlate in the case of *nec*: the multiple functions of *nec* show varying degrees of discourse-dependence, according to 'how far' the particle can look in order to retrieve a suitable alternative. Given the assumed structure-based mechanism for the generation of alternatives, the locus where the particle merges in the structure has a determining effect on the type of the alternatives. Increase in bondedness and decrease in syntagmatic variability with *nec* correlate with a change in the form taken by alternatives, which decrease in scope (i.e., size) from discourse units to (individual) scalar alternatives (ultimately lexically restricted once bondedness leads to univerbation).

Basing on what was discussed in Section 4, we can formulate a cline for the retrieval of alternatives as in (32), which reflects the two parameters of structural scope and syntagmatic variability:

(32) Cline in the retrieval of alternatives:
across sentence topics > within the same sentence topic > within a scale introduced by the item in focus

When *nec* is a discourse-structuring connector, the alternatives are represented by the preceding discourse units across sentence topics. Also alternatives to the additive stand-alone focus particle can be found in the broader context, spanning across sentence topics.

In the correlative negation use, instead, the alternatives are found within the same sentence topic: they are explicitly listed as syntactic conjuncts, joined by means of the Junction Phrase, and are subject to a information-structural and syntactic parallelism condition. This step in the cline is remindful of what Zeevat & Jasinskaja (2007) observe for English *and*: they propose a uniform analysis of two-place and one-place *and* as additive particle, and argue for a diachronic grammaticalization path from adverbial connector to clausal conjunction, consisting in the syntacticization of the retrieval of the alternative satisfying the particle's presupposition, which becomes fixed to the first conjunct. In Section 4.3 I proposed that the loss of polarity-switch uses with the correlative particle may be due to a strengthening of the parallelism requirement as to encompass polarity. In turn, the loss of the discourse-structuring use attested in Romance may be

diachronically connected to the loss of polarity switch with the correlative particle, due to a general stricter parallelism requirement on alternatives (that have to contain negation). The same-polarity requirement may be argued to lead to the loss of the contrastive value that the discourse connector could have.

In the innovative use as scalar particle, alternatives are not directly dependent on the surrounding discourse context, since a scale can be accommodated on the basis of world knowledge alone. The crucial ingredient of discourse-dependence is the anaphoric requirement imposed by the additive presupposition. Hence, the loss of this anaphoric requirement when the particle gets reanalyzed as scalar amounts to a decrease in discourse-dependence.

We see, therefore, that the cline in (32) closely corresponds to a cline of discourse-dependence in the interpretation of the particle, as summarized in (33):

(33) Cline of discourse-dependence (from higher to lower):
discourse-structuring > additive focus marking > correlation > scalar focus marking

The cline in (33) can in fact be argued to motivate the cline in (32): the loss of context-dependence lies at the core of the grammaticalization process, which in turn entails the decrease of the size of alternatives (decrease in scope and syntagmatic variability, and increase in bondedness).

The use of *nec* as a morpheme in the new Romance n-words shows a complete absence of discourse-dependence (in the relevant sense), representing the endpoint of the grammaticalization process: an extreme increase in bondedness brings to conclusion the process of functional enrichment, which causes the particle to become a mere morphosyntactic expression of uninterpretable formal features.

To conclude, the main generalization on semantic change emerging from this case study is that the loss of context-dependence is a determining factor in grammaticalization processes involving functional items. The main dimension of context-dependence considered here is the mechanism of retrieval of alternatives, which is dependent on the level of syntactic attachment of the particle. Different degrees of context-dependence depend on the portion of context within which the particle may look for a suitable antecedent. In the case of *nec*, the loss of the anaphoric requirement linked to its additive semantics emerges as the main trigger towards the decrease in the scope of the alternatives that is connected to the development of a scalar reading.

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Chapter 3

Vagueness, context-sensitivity and scale structure of four types of adjectives with the suffix *-ish*

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In English, the adjective-forming suffix *-ish* can be productively tacked onto relative adjectives (e.g. *tall-ish*) and total absolute adjectives (e.g. *dry-ish*), but not to most partial absolute adjectives (e.g. *?bent-ish*) or inherently non-scalar adjectives (e.g. *?pregnant-ish*). By applying Burnett (2017)'s recent framework *DelTCS* situated within *Delineation Semantics*, which she enriched using the notions *Tolerant, Classical, Strict*, first formulated in Cobreros et al. (2012), I will show why suffixal *-ish* is felicitous with the first two subtypes of adjectives, but not with the latter two. After a brief comparison with a similar framework Lasersohn (1999) it will be shown that the scale structure in the *DelTCS* approach is derived from the adjective's context-sensitivity and vagueness patterns. Furthermore, the discussion will point to a few instances that do not neatly fit into the mold of current semantic analyses as well as some suggestions on how to obtain a clearer picture of the actual attested data.

1 Introduction

The suffix *-ish* in Present-day English originates from the bound morpheme *-isc* in Old English and denotes associative meaning with nouns (i.e. *N.ish* 'having the character/ nature of N', e.g. *baby.ish*) and approximative meaning mostly with adjectives and numerals as bases (i.e. *A.ish / Num.ish* 'approaching the quality of A/Num', e.g. *green.ish, 30-ish*)[1] (cf. the *Oxford English Dictionary* (OED) entry for *-ish*1). Unlike nominal bases, which were present in Old English, adjectival

[1]The notions *associative* and *approximative* in this context originate from Traugott and Trousdale (2013).

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bases started to appear in Middle English with color adjectives (e.g. *yellowish* in 1379, cf. Marchand 1969:306)[2]. Both uses are still highly productive (cf. Bauer, Lieber and Plag 2013:305; Dixon 2014:235), uses which are attested in several corpora and in many cases already listed in the OED. Thus as a suffix, *-ish* is quite prolific, attaching to numerous bases, including verbal (e.g. *snappish*, 1542, see the OED entry for *snappish*), adverbial (e.g. *nowish*; not listed in the OED yet, but attested in the COCA once and 42 times in the corpus iWeb, featuring data from countless websites), numeral bases (e.g. *elevenish* (1916), *fifty-five-ish* (1941), cf. OED, entry *-ish*, suffix1), and proper names (e.g. *Heine-ish* (1887), cf. OED, entry *-ish*, suffix1), as well as multi-word units such as compounds (e.g. *schoolgirlish* 1821, see corresponding OED entry), and phrases (e.g. *middle-of-the-nightish)*[3]. The derivation of ethnic nouns and adjectives (e.g. *Engl.ish*$_{A/N}$) is no longer productive and will be excluded from consideration here. Kuzmack (2007, in Traugott and Trousdale 2013:234) observed that in the associative use, *-ish* denotes similarity to its base, while the approximative *-ish* stresses dissimilarity. The focus in this paper will be on the approximative use of *-ish* that most often occurs with adjectival bases. Consider examples (1) and (2) below:

(3.1) He was a stout, **tallish** young man.
(GloWbE, US G, http://www.mendele.com/WWD/WWDdead.html)

(3.2) Mola took his master's hat and gloves at the door, handing him a glass half-filled with a **greenish** liquid.
(COCA, Fiction, *Everfair*, Shawl 2017)

In both examples the addition of *-ish* to the adjectival bases *tall* and *green*,

[2] An anonymous reviewer refers to the results of a large-scale corpus study and states that some relative adjectives (e.g. *thinnish*, *thickish*) have started to appear as *-ish* derivatives at roughly the same time as color adjectives. Unfortunately I have no way of verifying this claim as the reviewer has not disclosed the corpus or corpora used. My own investigation of the *Penn-Helsinki Parsed Corpus of Middle English 2 (PPCME2)* has not turned up evidence of deadjectival *-ish* adjectives in Middle English. After checking with the *Middle English Compendium (MEC*, formerly *Middle English Dictionary)* and the OED, it can be said that the dates of color adjectives and relative adjectives of the type mentioned above are indeed not far apart: For example, the earliest instances of *greenish*, *yellowish*, *reddish*, and *whitish* are dated in both dictionaries to a1398, while *blackish* and *brownish* first appear around the early 15th century (the OED dates *brownish* to 1555 however). Conversely, *thinnish* and *thickish* appear slightly later in the MEC (a1425) and are dated to the middle of the 16th century in the OED. Thus, depending on the source used, the earliest dates of occurrence will slightly change. It is not wrong to say, however, that deadjectival *-ish* adjectives generally occurred with bases of color at one of the earliest stages.

[3] BNCweb entry BMS 1806, Fiction and Verse: *Gate-crashing the dream party.*

respectively, explicitly marks that the standards set by the adjectives are approximated, but not reached completely.

The picture is complicated by the inherent vagueness of the relative adjective *tall* in (1) and, I propose, the total absolute adjective *green* in (2)[4]. How can we know that a person counts as tall if we do not have a standard to which we can compare that person? And how do we determine such a standard? Where is the minimum threshold above which an object can be considered tall? These are questions frequently discussed in the literature about vagueness and vague adjectives in particular[5]. They address the central problem of vague predicates: determining borderline cases, fuzzy boundaries and the classical paradox of the Sorites, i.e. if we continuously add one centimeter to a building of average height, at one point we have to admit that it is tall. We do encounter the problem of not being able to say at which point exactly the building has reached the threshold and can unambiguously be considered tall, which is due to the incremental fashion of adding to the height of the building. Now consider examples (3) and (4) below:

(3.3) The **wettish**, sticky cement floor sent chills all the way up to her temples. (COCA, Fiction, *The Evidence*, Qi 2005)

(3.4) My grass is all thin and **dead-ish**, what is your advice on overseeding? (GloWbE, US G, http://richsoil.com/lawn-care.jsp.)

Example (3) features a partial absolute adjective *wet*, which acquires the meaning 'less than fully wet' when *-ish* is attached. Similarly, in (4) the inherently non-scalar adjective *dead* is given a gradable meaning with *-ish* and denotes that the lawn is not yet totally beyond repair, but in a state that requires (professional) help. Note here that only 7 tokens were found for *wettish* in the *Corpus of Contemporary American English* (COCA) and only 2 tokens for *dead-ish* (and none for *deadish*[6]) in the corpus *Global Web-based English* (GloWbE). Both corpora are

[4] Whether color adjectives are actually classified as relative or as absolute adjectives is a matter of ongoing debate and the results thus far have eluded a clear picture (cf. Hansen and Chemla 2017 for an experimental approach). Burnett (2012a, 2012b) considers them to fall into the relative camp due to the (syntactic) tests that are felicitous with them.

[5] For instance, concerning the determination of the standard degree of tallness, von Stechow (1984) proposes the positive operator *Pos* which aims at giving a unified treatment of polar opposites such as *tall-short*. I will not go into further detail here, the interested reader is kindly referred to von Stechow's work (e.g. 1984, 2009). See also Kennedy and McNally (2005) and Kennedy (2007) who employ the operator *pos* in their frameworks.

[6] The fact that the spelling of *dead-ish* contains a hyphen can be an indicator that its usage is

considered representative and balanced and feature 560 million words (COCA) and a considerable 1.9 billion words (GloWbE), respectively. Compared to the adjectives *tallish* (43 tokens in GloWbE) and *greenish* (751 tokens in COCA), both *wettish* and *dead-ish* are virtually non-existent by comparison. Of course, the usual caveats for corpus-analytic studies apply. Since the aim here is not to provide a full-fledged corpus study, it will suffice to say that the preliminary results of the corpora indicate that *-ish* does not easily attach to adjectives that are partially absolute or non-scalar[7].

The paper is structured as follows: Section 2 will introduce the four adjectival subtypes mentioned earlier, section 3 will give an introduction to the *Tolerant, Classical, Strict* framework that is employed in Burnett (2017). In this respect section 3 features an analysis of the scale structure of the four different subtypes of adjectives with *-ish* and will encompass a discussion of why relative and total absolute adjectives are productive with the suffix, whereas partial absolute and non-scalar adjectives are infelicitous in most cases. Section 5 will conclude the findings and point to further areas of research.

2 Four subclasses of adjectives

In the classification of four subgroups of adjectives, I follow Burnett (2017) and others who propose adjectives like *tall*, *expensive* and *cheap* as belonging to Relative Adjectives (RA), *empty*, *clean*, *straight* and others as being part of Total Absolute Adjectives (AA^T), *dirty*, *bent* and *wet* as included in the Partial Absolute Adjective class (AA^P) and, finally, adjectives such as *pregnant*, *dead*, or *hexagonal* which belong to the Non-Scalar adjective type (NS) (cf. Burnett 2017:4)[8]. The distinction into relative and absolute adjectives is nothing new, just as the observation that the absolute class incorporates two distinct subclasses is well established (see, for example, Rotstein and Winter 2004; Kennedy and McNally

unusual and marked for the speaker. It is often found in cases with hiatus (e.g. *country-ish*), when the base word consists of an abbreviation (e.g. *Espn-ish*, *Cia-ish*), after certain numerals (e.g. *23-ish*), and frequently after proper names (e.g. *Verne-ish*). One phonological reason why *-ish* nevertheless attaches to *dead* (but not to *pregnant*, *hexagonal*, *illegal*, etc., which are also all non-scalar) is that the suffix primarily selects monosyllabic bases (cf. Dixon 2014:235). While it can easily be shown that this is not a constraint, preference of monosyllabic bases should be understood here in the sense of frequency.

[7] In order to conduct a 'proper' corpus analysis, among other things, we would need to expand the class of adjectives to include an equal number of each subclass which is then compared in each of the corpora mentioned above.

[8] The distinction between total and partial adjectives is said to have originated from Yoon (1996) (cf. Kennedy and McNally 2005:355).

2005; Kennedy 2007; Toledo and Sassoon 2011). For instance, Kennedy and McNally (2005) have investigated the RA-AA distinction with respect to the felicity of degree modifiers (e.g. *slightly*, *perfectly*, *completely*) and *for*-phrases, the latter of which explicitly specifies the contextual domain that determines the standard degree and which are natural for relative adjectives, but odd for absolute adjectives. They follow Unger (1975), who claims that only relative adjectives are context-sensitive and vague. A different view is proposed by Rotstein and Winter (2004), who investigate the total-partial distinction for gradable adjectives and who contend that absolute adjectives can *also* be context-sensitive and vague when they are used in 'loose talk' (cf. Lewis 1979). In these cases, the standard for total/partial absolute adjectives is not necessarily the exact maximal or minimal degree on a scale. Evidence for this view is provided by the use of the degree modifier *completely*, which selects absolute standards. For instance, consider the 'maximality modifier' *completely* as discussed in Kennedy and McNally (2005) and Rotstein and Winter (2004), among others. In (5) below, when *completely* modifies the AA^T *clean*, the adjective conveys the maximal amount of cleanliness, where the floor is so immaculate as to be able to literally eat from it.

(3.5) The floor is not clean, it is *completely* clean.

Toledo and Sassoon (2011) maintain that both accounts have their merits, but neither is entirely able to account for all the facts (p. 140). They propose an approach which takes comparison classes (CCs) into account, an approach which also finds application in Burnett (2017) concerning comparison-class based context sensitivity. Relative adjectives show a more substantial form of both context-sensitivity and vagueness than absolute adjectives in that they exhibit universal *and* existential context-sensitivity (AAs only show the latter) and in that they permit potentially vague positive *and* negative forms (AAs show a different distribution depending on the subtype) (cf. Burnett 2017). The notions above require some explanation. Universal context-sensitivity, according to Burnett (2017:41), corresponds to the adjective's ability to shift its thresholds in any comparison class. Kennedy (2007:28) and others have suggested to employ a definite description test to distinguish whether an adjective is able to shift its standard of comparison:

(3.6) Show me the expensive one.

(3.7) Show me the green one.

According to this test, the adjective in (6) would independently be considered true of two objects (e.g. watches) outside of the test, but has been shown to pertain to the *more* expensive one in the context of this utterance. In (7) however, when both objects (e.g. sweaters) are either both green or not green, uttering (7) becomes infelicitous. Absolute adjectives are therefore not considered to be universally context-sensitive, but rather existentially so. They appear to be able to shift their criteria of application in some comparison classes, but do so only when they appear in the context of 'imprecision' (cf. Burnett 2017:42). Hence, when the absolute adjective *green* is used loosely, modification with a *for*-phrase becomes more acceptable:

(3.8) This lawn is green for midsummer in Texas.

Example (8) is acceptable when we describe a lawn that only shows a few brown patches here and there, but is not completely dead. The same utterance would seem infelicitous in a context in which the lawn is completely lush green.

By using the notion *potentially vague*, Burnett (2017:49) aims at showing that the vagueness of relative adjectives and the vagueness in the case of 'loose' uses of absolute adjectives is due to a single underlying phenomenon. In her conception, vagueness is a stage-level property that is subject to contextual variation, and potential vagueness is defined as follows:

(3.9) An adjective *P* is *potentially vague* iff there is some context *c* such that *P* gives rise to a Soritical argument in *c* (Burnett 2017:50, emphasis in original).

The potential vagueness just described is not distributed symmetrically over absolute adjectives. While relative adjectives have potentially vague positive (P) and negative forms (¬P), total absolute adjectives only have positive potentially vague forms (P), and partial absolute adjectives display the opposite pattern, i.e. they only have negative potentially vague forms (¬P). In order to illuminate the relationship, consider the following examples:

(3.10) (RA) *Expensive*: For all x, y, if x is expensive, and x and y's cost differ by one monetary unit (i.e. a Dollar, a Euro, etc.), then y is expensive ⟶ 0 positive potential vagueness

(3.11) (RA) *Expensive*: For all x, y, if x is not expensive and x and y's cost differ by one monetary unit (see above), then y is not expensive ⟶ 0 negative potential vagueness

(3.12) (AA^T) *Empty*: For all x, y if x is empty, and x and y's contents differ by a single item, then y is empty ⟶ 0 positive potential vagueness

(3.13) (AA^T) *Empty*: For all x, y, if x is not empty and x and y's contents differ by a single item, then y is not empty ⟶ 0 **False** (no negative potential vagueness)

(3.14) (AA^P) *Dirty*: For all x, y, if x is dirty, and x and y differ by one single stain, then y is dirty ⟶ 0 **False** (no positive potential vagueness)

(3.15) (AA^P) *Dirty*: For all x, y, if x is not dirty, and x and y differ by one single stain, then y is not dirty ⟶ 0 negative potential vagueness

The examples just given require some clarification. In order to illustrate (12), consider two containers, one of which is entirely empty (x), the other of which holds exactly one bean (y). In a tolerant use of the adjective, both containers would be judged empty. Conversely, container x in example (13) holds a single bean, whereas y contains no bean at all. Thus, container y is not judged $\neg$*empty* by comparison and the principle of tolerance does not hold in this case (cf. Burnett 2017: 51). Let us now turn to the examples illustrating AA^Ps, i.e. adjectives typically associated with scales that have minimal elements. Example (14) claims intolerance concerning the positive *dirty*: An object y that is completely clean will not be considered dirty, even if object x only differs in having one stain. The negative form *not dirty* satisfies tolerance however, i.e. it is P-vague. Consider a situation where Mary wants to paint her living room. In that case, choosing an outfit which has a speck of dirt on it will be considered as being not dirty, i.e. in the context of painting, a single stain on the chosen outfit will be perceived as irrelevant (cf. Burnett 2017: 52).

In sum, relative adjectives are symmetrically vague in that they do not discriminate between positive and negative forms (hence, they are potentially vague with either form of the predicate). Absolute adjectives, by contrast, exhibit an asymmetric distribution of vagueness. Total absolute adjectives are tolerant with positive forms, but intolerant when it comes to distinguishing individuals situated at the bottom end of some scale from those that are at the second to last degree: In Burnett's (2017:51) example, *empty* is infelicitous with x containing a single spectator (in a theater, for instance), and y having no spectator at all. In other words, if x is *not empty* and differs by only one individual from y, y cannot be considered tolerantly true in this context. With partial absolute adjectives, the picture is reversed. They exhibit negative potential vagueness in that they are tolerant

with respect to individuals at the lower endpoint of a scale (15), but display no potential vagueness with corresponding positive forms (14).

Finally, non-scalar adjectives exhibit neither context-sensitivity nor potentially vague forms in their precise uses. Burnett however claims that they can be turned into scalar absolute adjectives when they assume gradable interpretations (2017:44). In a 'loose' use of *pregnant*, for instance, we can see the properties of a gradable, context-sensitive adjective:

(3.16) Sue is very pregnant, for being in the third month.

Example (16) is only felicitous when we assume that Sue's pregnancy is already much more showing in her third month when compared to other women. Burnett (2017:44) observes that the scalar modifier *very* facilitates this gradable use of the adjective. In assuming that the non-scalar adjective has been coerced into an absolute adjective, Burnett is able to keep the semantic class of non-scalar adjectives 'pure' and can claim that as such they are not context-sensitive and non-gradable. She assumes that the distinction of AAs and NSs is of a pragmatic nature, i.e. a shifting operation in the level of precision with which the adjective is used (2017:95). This assumption involves the view that both AAs and NSs have precise semantic denotations, but are variable with respect to their pragmatic denotations. Applying this line of reasoning to the workings of complex words addresses a desideratum for morphological theory formulated in Plag et al. (1999: 226). Specifically, it takes the study of pragmatics into account and investigates the effect context has on the use of complex words.[9] Exactly what this perspective entails will be the subject of the following sections.

3 The *Delineation Tolerant, Classical, Strict* framework

The semantics of *-ish* has already been discussed within a degree semantics framework by Bochnak and Csipak (2014). They observed that *-ish* is felicitous with adjectives containing an open scale or those exhibiting an upper bound (i.e. a maximal value), but are questionable with adjectives which contain a lower bounded scale (2014:435-436), i.e. relative adjectives, total absolute adjectives, and partial absolute adjectives, respectively. The few cases where *-ish* attaches to non-scalar adjectives like *dead* are not discussed in their framework.

In the present paper, I propose an analysis in an alternative framework based on Cobreros et al.'s (2012) notion of *Tolerant, Classical, Strict* (henceforth *TCS*),

[9] I thank the anonymous reviewer who pointed me to their study.

which has been applied to vague adjectives in the recent framework of Burnett (2017). The idea to formalize vague predicates in a trivalent non-classical logic stems from the fact that "the principle of tolerance gives rise to the sorites paradox" in classical logic (Cobreros et al. 2012:348). That is, in order to allow a truth value which makes reference to tolerance as exemplified in (17) a third value has to be introduced.

(3.17) If some individual x is P, and x and y are only imperceptibly different in respects relevant for the application of the predicate P, then y is P as well (Cobreros et al. 2012:348).

This general idea has been implemented in different ways, as for example in the pragmatically oriented framework by Lasersohn (1999), which assigns a pragmatic halo around expressions such as the following:

(3.18) Mary arrived at three o'clock.

The time expression is taken to be close enough to truth in case of Mary arriving 15 seconds after three o'clock, for instance. The expression in (18) is assigned a denotation under which it is true and additionally contains a set of times that 'differ from the denotation only in some respect that is pragmatically ignorable in context' (Lasersohn 1999:526). This set of times is then understood as the pragmatic halo of the expression in (18) which is at the halo's center. Burnett (2017:29) notes that the *Halo* framework was not originally designed as a semantic theory of vagueness, but observes that the basic ideas are very similar to hers (and the model of *TCS* in general). In particular, the notion of *tolerant truth* is taken to be the equivalent to Lasersohn's *close enough to truth* (Burnett 2017:32). Further, what is described as *pragmatically ignorable* in Lasersohn's framework is paralleled by a notion of *indifference* in *TCS* (Burnett 2017:32). Thus, both frameworks include the "core intuition that at least one aspect of vagueness/pragmatic slack involves loosening the conditions of application of an expression with a precise semantic denotation to include other objects that are considered to differ in only 'pragmatically ignorable' ways" (Burnett 2017:32-33). However, even though the two frameworks may superficially be understood as mirror images of each other, Burnett suggests the *TCS* framework to constitute a refinement of pragmatic halos. Specifically, in *TCS* it is possible to derive non-classical denotations and orderings, which are simply given in the model by Lasersohn (1999) (cf. Burnett 2017:33).

Burnett's *Delineation Tolerant, Classical, Strict* (*DelTCS* in short) is part of a class of comparison-class-based semantic frameworks going back to Klein (1980).

The aim of her model is to provide a new relationship between the vagueness of adjectival predicates, the properties of context-sensitivity that these predicates involve as well as their corresponding scale structure. Her logical framework, based on indifference relations, "preserves the intuition that vague predicates are tolerant, but avoids the Sorites paradox" by a step-wise validation of tolerance (Burnett 2017:28). Indifference relations refer to change that is marginal enough to not make a difference to categorization of a predicate (i.e. one Euro more or less will not make a watch expensive or not expensive as compared to another watch which exhibits the value P or ¬P, respectively) (cf. Burnett 2017:1). Within the TCS extension of the Delineation framework, she assumes that the classical semantic framework is enriched with tolerant/strict denotations, which are established as a second step (2017:72, cf. also Cobreros et al. 2012). In doing so, she adds the function ~, which "maps a predicate and a comparison class to an indifference relation on the members of the class" (2017:72). Applied to the pattern of potential vagueness of the AA^T *empty* (see examples (12) and (13) above) we obtain the following distribution (cf. Burnett 2017: 76):

(3.19) Container x with no bean in it $\sim_{empty}$ container y with one bean in it

(3.20) Container x with one bean in it $\not\sim_{empty}$ container y with no bean in it

The definition for a tolerant model according to Burnett (2017:72) is given below:

(3.21) Tolerant model: For all P and all X ⊆ D, $\sim_P^X$ is a binary relation on X.

The novelty and difference to Cobreros et al. (2012) lies in the fact that a predicate *and* a CC are mapped to the indifference relation ~ (cf. Burnett 2017: 72). She splits the denotational system in half, assuming the classical denotations to be semantic and the secondary tolerant and strict denotations to be pragmatic in nature, the latter of which are formally defined in (22) and (23) (cf. Burnett 2017:73):

(3.22) Tolerant denotation:

$$[\![P]\!]^t_X = \{x : \exists d \sim_P^X x : d \in [\![P]\!]x\}.$$

(3.23) Strict denotation:

$$[\![P]\!]^s_X = \{x : \forall d \sim_P^X x, d \in [\![P]\!]x\}.$$

By adopting the view that tolerant and strict denotations are pragmatic in nature, she presents a solution to the paradox of absolute adjectives which become gradable through a derivational process from comparison-class-based (existential) context-sensitivity that is essentially pragmatic, not semantic as in the classical interpretation (2017:89).

The vague and context-sensitive properties that adjectival predicates possess are modeled by assuming a series of constraints that pertain to their different distributions. For the present purposes I will restrict the discussion of constraints to those that differ for the four subgroups of adjectives. Hence, given that relative adjectives are potentially vague with P and ¬P, they are symmetrical in their indifference relations, whereas absolute adjectives display an asymmetric distribution (see above), which is encoded into their indifference relations[10], as shown below (cf. Burnett 2017:77):

(3.24) Total axiom: If $[\![Q_1(a_1)]\!]_{M,D} = 1$ and $[\![Q_1(a_2)]\!]_{M,D} = 0$, then $a_2 \not\sim^X_{Q_1} a_1, for\ all\ X \subseteq D$.

(3.25) Partial axiom: If $[\![R_1(a_1)]\!]_{M,D} = 1$ and $[\![R_1(a_2)]\!]_{M,D} = 0$, then $a_1 \not\sim^X_{R_1} a_2, for\ all\ X \subseteq D$.

The axioms ensure that total absolute adjectives are identical in their classical and strict denotations, and partial absolute adjectives have identical classical and tolerant denotations. Since non-scalar adjectives do not show potential vagueness, it is assumed that P and ¬P are both precise, i.e. their classical (semantic) denotations coincide with their pragmatic denotations, which is ensured by the pragmatic constraint *Be precise* (cf. Burnett 2017:77-78).

The assumptions for context-sensitivity patterns follow in a straightforward manner. Given that relative adjectives exhibit both universal and existential context-sensitivity, their denotations are much less restricted in variation depending on a comparison class. Thus, relative adjectives are consistently felicitous with *for*-phrases. Consider the following example, which depicts the assessment to an exchange about the prices of two bottles of wine, one of which costs $130 and another which is of a more affordable price of $17. The *for*-phrase characterizing the less expensive of the two is fully felicitous with the RA *cheap*:

(3.26) Gifford: Seventeen, that's cheap for a bottle…
(COCA, Spoken, NBC Today: *Today's talk*, 27.04.2011)

[10] A note on vocabulary: a_1, a_2, a_n refers to individual constants, Q refers to AA^T, R to AA^P. For a comprehensive vocabulary of Burnett's model, see her p. 56.

Absolute adjectives have been shown to only allow for existential context-sensitivity and their denotations vary according to subtype: Total absolute adjectives have context-sensitive tolerant denotations (the classical and strict denotations are identical across comparison class, see above), partial absolute adjectives involve corresponding strict denotations. Non-scalar adjectives do not show variation in their tolerant and strict denotations since they are subject to the pragmatic constraint *Be precise* (cf. Burnett 2017:85). The denotations associated with these patterns are given below (cf. Burnett 2017:85, slightly adapted):

(3.27) AA^T: For all X ⊆ D,

$$[\![Q_T]\!]^s_X = [\![Q_T]\!]_X.$$

(3.28) AA^P: For all X ⊆ D,

$$[\![R_P]\!]^t_X = [\![R_P]\!]_X.$$

The patterns can give an explanation for why AAs become more acceptable with *for*-phrases: The *for*-phrase specifies explicitly the content of a given comparison class. Burnett (2017: 86) holds that the informational content CCs contribute to the interpretation of absolute adjectives is non-trivial and informative in their tolerant or strict uses. Thus while the semantic denotations remain fixed across contexts, sentences like (8) above improve when they are used loosely. Since the scale structure is derived from the context-sensitivity patterns associated with the different classes of adjectives, corresponding effects are predicted. The scale structure properties will be subject of the section below.

4 Scale structure and the suffix *-ish* with adjectives in *DelTCS*

As we have seen in the examples at the beginning, the suffix *-ish* felicitously selects those adjectives that fall in the classes of RAs and AA^Ts, respectively (i.e. *tallish*, *greenish*), but is rather infrequent with the other two classes, i.e. AA^Ps and NSs, even if we find a number of attestations. In Bochnak and Csipak's (2014) framework, it was assumed that the reason why *-ish* was felicitous with open-scale adjectives (i.e. RAs) and those that feature a maximum value (i.e. AA^Ts) was due to the fact that they pick out a degree that is slightly less than a contextually given standard (2014:436). With adjectives that make reference to a lower-bounded scale, this option is not given, since they are already situated at the lower end of the scale and hence cannot be below the minimum standard.

In the *DelTCS* framework introduced above, scales are derived from the adjective's corresponding denotations. Relative adjectives show both universal and existential context-sensitivity and are potentially vague for the positive form of a predicate as well as for its negation. Their scales are assumed to be derived from their semantic denotations, i.e. they have neither maximal nor minimal elements (cf. Burnett 2017:90,106), which corresponds to Bochnak and Csipak's open scale. Total absolute adjectives were shown to be potentially vague for the positive form and to exhibit existential context-sensitivity. They are associated with scales that are derived from their tolerant denotations, i.e. their scales exhibit maximal elements, whereas the opposite is true for partial absolute adjectives (2017:90,106). AA^Ps exhibited an asymmetry in their potential vagueness pattern that showed the reverse, i.e. they were considered to be (potentially) vague for the negation of the predicate (¬P). Their scales are correspondingly derived from their strict denotations and thus contain minimal elements (2017:90,106). Since the pragmatic denotations (i.e. the tolerant and strict denotations) of non-scalar adjectives are identical with their semantic denotations, they will not be associated with any scales (2017:90). Burnett however notes an exception to this observation. Hence, non-scalar adjectives can be coerced into scalar predicates, making them subject to the same constraints that hold for absolute adjectives. In that case, they do not follow the axiom *Be precise*, which has the consequence that they can be analyzed in the same way as absolute adjectives. Here, Burnett's approach is very different from other frameworks in that she assumes non-scalar adjectives to actually be absolute adjectives which are used with a higher degree of precision (2017:97-98). In other words, the difference between AAs and NSs is manifested in their pragmatic denotations, not their semantic ones (cf. Burnett 2017:98) and it depends on how an adjective is used in a particular context: In a precise use, a non-scalar adjective will not allow for variable meaning by the constraint *Be precise*, whereas in a context that allows for a lower level of precision, the NS is coerced and becomes context-sensitive, i.e. showing the characteristics of a vague and gradable predicate. For instance example (16) above, which was used in a context in which a non-scalar adjective (i.e. *pregnant*) can turn into a gradable one with the help of a *for*-phrase, shows that these adjectives can be used felicitously with a gradable meaning given that the context allows for a loose use. In these cases, NSs are also quite natural in comparative constructions (example from Burnett 2017: 96):

(3.29) Sarah is *more pregnant* than Sue; Sarah is showing more.

What do these assumptions mean for the suffix *-ish* and its application? For

RAs and both AAs the account can be laid out in a quite straightforward manner. The scale structures show the same characteristics as in Bochnak and Csipak (2014) and *-ish* targets these scales. In doing so, it lowers the precision with which the adjectives are used, making them available for 'loose' use. The difference in Burnett's (2017) account is that the scales are derived from the adjective's context-sensitivity. Recall that with relative adjectives, both universal and existential context-sensitivity is possible. This allows RAs to be associated with an open scale that shows neither maximal nor minimal elements (as for instance with *tall*). With its approximative meaning, *-ish* can approach the quality instantiated by the adjective (e.g. *tall-ish*), but does not reach it in full measure. The predictions concerning potential vagueness can be explained by the indifference relations of relative adjectives, which were said to be symmetric, i.e. they are potentially vague with both P and ¬P. With *tallish* (i.e. P) and *not tallish* (i.e. ¬P), we can observe that the respective antonyms *shortish* and *not shortish* are also relative adjectives, i.e. the two adjectival types display a mirror image of each other.

Total absolute adjectives were shown to be associated with scales derived from their tolerant denotations, i.e. they exhibited maximal elements and only have potential vagueness with their positive forms. That is, the positive forms of *clean*, *dry*, or *straight* can be targeted by *-ish*, again with *-ish* adding the meaning of approximation to the positive form. Their antonyms *dirty*, *wet*, or *bent*, however are all partial absolute adjectives, which are associated with scales that have minimal elements which are derived from their strict denotations. These adjectives show potentially vague negative forms (¬P) and cannot be targeted as easily by *-ish* (cf. also Bochnak and Csipak 2014:437). We can thus say that the applicability with *-ish* correlates with the type of adjective and their associated properties (with a few exceptions, see example (3) above).

Since non-scalar adjectives generally occur in contexts that favor precise uses (cf. Burnett 2017:95-96), they are hardly found with *-ish*. However, as we have seen in (4) above, in some cases they can be turned into an absolute adjective when the standard of precision with which they are used is loosened. This is what happened with the NS *dead*. In example (4) above, *-ish* is able to attach to *dead* because the adjective's conditions of application have been loosened. In this case, it features an upper bound that is approached by *-ish*, i.e. it has a maximal element as is generally the case with total absolute adjectives. Burnett (2017:112-113) notes however that many coerced non-scalar adjectives are able to be associated with both types of scale structure, i.e. those that have maximal and those that have minimal elements, which her examples show, given slightly adapted in (30) to

(32), respectively.

(3.30) DEA agent 1: Bring me up to speed on Tuco Salamanca.
DEA agent 2: Dead.
DEA agent 1: Still?
DEA agent 2: *Completely.*
(*Breaking Bad* 2009. Season 2, episode 5, "Breakage.")

(3.31) The coma patient is *almost* dead.

(3.32) 'Dead Person is Actually Only *Slightly* Dead.'
(Headline from http://www.therobotsvoice.com)

Examples (30) and (31) illustrate the coerced NS *dead* with a scale associated with maximal endpoints (i.e. characteristic of AA^Ts), whereas (32) is an example for a partial absolute adjective, indicated by the modifier *slightly*. Thus, *dead* may be coerced into either type of adjective, depending on context. The NS *dead* is not exclusive in showing both patterns. Burnett (2017: 113) gives ethnic adjectives such as *Canadian* and the non-scalar adjective *illegal* as further examples. The exact conditions that are responsible for an NS to select which end of a scale remain to be elucidated.

The findings of attachability for *-ish* should not be taken to be absolute. For example, we find cases of relative adjectives that so far have not been attested with *-ish* (e.g. *?intelligent-ish*), whereas some non-scalar adjectives occur quite freely with *-ish* (e.g. *squarish*, *dead-ish* to some extent). Thus, there has to be a further factor that plays a role in the applicability of *-ish* that has not yet been accounted for. One factor that immediately comes to mind is a non-semantic one. It has to do with the syllable structure of adjectives that are favored by *-ish*. As has been mentioned above, *-ish* preferably attaches to monosyllabic bases which is true for *squarish* and *dead-ish*, but not for *?intelligent-ish*. This might be a factor which rather concerns productivity of *-ish* derivatives however, and not so much whether they are generally well-formed and felicitous as we do of course find bases with more than one syllable to which *-ish* attaches. Thus, this factor alone will undoubtedly not be sufficient to account for the patterns we have encountered with *-ish*, but it could be seen as a contributing factor.

5 Conclusion

This paper has investigated the English suffix *-ish* with the four subtypes of adjectives that are discussed in the literature. In doing so, the *Delineation Tolerant,*

Classical, Strict framework recently implemented by Burnett (2017) was used. It has been found that the patterns *-ish* shows with different types of adjectives can felicitously be described in a framework in which the scale structure of adjectives is derived by the patterns of context-sensitivity they depict. Context-sensitivity thus correlates with the patterns found for potential vagueness and scales. By mapping tolerant and strict pragmatic denotations on basic classical (semantic) ones, the framework approaches issues of vagueness from a more pragmatic angle than other well-known frameworks such as *Degree Semantics*.

It has further been noted that suffixal *-ish* does not show an absolute fit concerning its productivity patterns with different adjectival types. Therefore, it has been suggested to look for further (e.g. phonological, but presumably also other semantic) factors in conjunction with the semantic ones introduced above to explain these divergent occurrences of *-ish*. To be sure, the general tendency of productive derivations with a certain type of base is not disputed, but the counterexamples mentioned above should nevertheless be accounted for in a semantic theory, even though they amount to only a few attestations. However, rather than dismissing them as rare and subscribing to the view that unless frequent (counter-)examples of a phenomenon are attested, the phenomenon is non-existent, I take the attestations that deviate from the general pattern as being deemed acceptable enough by speakers in particular contexts. In order to make this claim stronger, a full-fledged corpus analysis could be devised in order to see which forms are actually attested with which frequencies and in what contexts they are found to occur.

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Chapter 4

On the semantic change of evidential argument *jakoby*-clauses in Polish

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The main aim of this chapter is to examine the semantic change of evidential argument clauses headed by the complementizer *jakoby* in the history of Polish. Mainly, I argue that *jakoby* developed from a hypothetical comparative complementizer meaning 'as if' into a hearsay complementizer, and provide empirical evidence showing that this process happened in the late Old Polish period, i.e. around 1500. To begin with, I compare *jakoby*-clauses with complement *że*-clauses ('that'-clauses) at the syntax-semantics interface, elaborate on their selected differences, and account for the source of these differences. Diachronically, I show that two factors in the lexical meaning of *jakoby* were responsible for the semantic change that it underwent: i) equative comparison and ii) counterfactual meaning. Both factors are taken to have paved the way for inferences from reportative or hearsay information and, simultaneously, for the compatibility with an informational conversational background.

Keywords: evidentiality, inference, hearsay, Polish, diachrony, semantic change

1 The puzzle

Compare the two following sentences from Polish introduced by the complementizer *jakoby*. Whereas the example given in (1a) is from Old Polish, (1b) illustrates how argument *jakoby*-clauses are mainly used in Present-day Polish:

(1) a. iżeć się jest ludziem na ziemi tako było
that REFL be.3SG people.DAT on earth.LOC so be.*L*-PTCP.SG.N
widziało, **jakoby** się ono na nie obalić
seem.*L*-PTCP.SG.N jakoby REFL it on them.ACC slay.INF

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było chciało
be.L-PTCP.SG.N want.L-PTCP.SG.N
'that it seemed to the people on earth as if it wanted to slay all of them'

(KG, *Kazanie I: Na Boże Naordzenie*, 26–27)

b. Firma zaprzeczyła, **jakoby** były zgłoszenia
company deny.L-PTCP.SG.F jakoby be.L-PTCP.N-VIR.PL reports
o wadliwych kartach.
about faulty cards.loc
'The company denied that there were supposedly reports about faulty prepaid cards.'

(NKJP, *Dziennik Zachodni*, 27/9/2006)

In (1a), the dependent clause is introduced by the hypothetical comparative complementizer *jakoby* corresponding to the meaning of the English complex complementizer *as if*, as the English paraphrase of (1a) indicates, and it is embedded under the matrix verb *widzieć* 'seem'. In (1b), in turn, the *jakoby*-clause is embedded under the speech verb *zaprzeczać* 'deny'.[1] What both clauses have in common is that they occupy one of the argument positions of the matrix verb (= argument clauses). However, in (1b) *jakoby* itself does not render the meaning of what English *as if* expresses; instead it comprises the compositional meaning of a complementizer introducing a dependent declarative clause (= *that*) and, at the same time, of a hearsay adverb (e.g. *allegedly*, *supposedly* or *reportedly*), giving rise to a hearsay or a reportative interpretation. The meaning of *jakoby* must have changed because in Present-day Polish *jakoby*-clauses are unembeddable under verbs of seeming, as was the case in Old Polish, see (1a) above:

(2) *Firmie wydaje się, **jakoby** były zgłoszenia o
company.DAT seem.3SG REFL jakoby be.L-PTCP.N-VIR.PL reports about

[1] *Jakoby* can also be used as a hearsay adverb:

(i) *Sąsiedzi kupili **jakoby** nowy samochód.*
neighbors buy.L-PTCP.VIR.PL jakoby new car
'Supposedly, our neighbors have bought a new car.'

I am not concerned with *jakoby* used as an adverb in this chapter; for more details see Jędrzejowski (2012), Socka (2010), Stępień (2008), Wiemer (2015), Wiemer & Socka (2017a, 2017b), Żabowska (2008), among many others.

wadliwych kartach.
faulty cards.loc
Intended meaning: 'It seems to the company as if there were any reports about faulty prepaid cards.'

Remarkably, other West-Slavic languages like Czech have not experienced this change:

(3) Czech, Radek Šimík (pc.):

a. Zdálo se, **jako by** byl opilý.
seem.*L*-PTCP.SG.N REFL as SUBJ be.*L*-PTCP.SG.M drunk
'It seemed as though he were drunk.'

b. *Firma popřela, **jako by** byly nahlášeny
company deny.*L*-PTCP.SG.F as SUBJ be.*L*-PTCP.N-VIR.PL reports
jakékoliv vadné karty.
any faulty cards
Intended meaning: 'The company denied that there were reports about any faulty cards.'

The main objective of this study is to figure out to what extent and under what circumstances *jakoby* used as a complementizer changed in the history of Polish.

The structure of this chapter is as follows. Section 2 is concerned with the question of how argument *jakoby*-clauses are used in Present-day Polish. In this context, I will compare *jakoby*-clauses with canonical subordinate clauses headed by the complementizer *że* 'that', and point out several striking differences between both clause types at the syntax-semantics interface. In Section 3, I will give an overview of how *jakoby*-clauses could be used in older stages of Polish. A formal account of to what extent and under what circumstances *jakoby* changed is presented in Section 4. In modeling this change, I will make use of the possible worlds semantics initiated by Kratzer (1981; 1991; 2012) and developed further for evidential expressions by Faller (2002; 2011) and Matthewson et al. (2007). Finally, I conclude the findings in Section 5.

2 *Jakoby*-clauses in Present-day Polish

In this section, I examine selected properties of *jakoby*-clauses in Present-day Polish at the syntax-semantics interface. In doing so, I focus first on syntactic peculiarities by comparing *jakoby*-clauses to canonical declarative *że*-clauses (= *that*-

clauses). Then, I account for where the differences between both clause types come from by decomposing the meaning of the complementizer *jakoby*.

2.1 Licensing conditions

Complement clauses in Polish are usually headed by the complementizer *że* 'that'.[2] In this connection, I propose the following descriptive condition: If a *jakoby*-clause occupies an argument slot of a clause-embedding predicate, it can always be replaced by a *że*-clause. Correspondingly, the embedded *jakoby*-clause given in (1b) – repeated here for convenience as (4a) – is supposed to be replaceable by a *że*-clause. This prediction is borne out:

(4) a. Firma zaprzeczyła, **jakoby** były zgłoszenia
company deny.*L*-PTCP.SG.F jakoby be.*L*-PTCP.N-VIR.PL reports
o wadliwych kartach.
about faulty cards.loc
'The company denied that there were supposedly reports about faulty prepaid cards.'

b. Firma zaprzeczyła, **że** były zgłoszenia o
company deny.*L*-PTCP.SG.F that be.*L*-PTCP.N-VIR.PL reports about

[2]Note that in some environments a more complex complementizer is required, i.e. *żeby*:

(i) *Każda matka chce, **żeby** jej syn chodził do przedszkola.*
every mother want.3SG żeby her son go.*L*-PTCP.SG.M to kindergarten.GEN
'Every mother wants her son to go to the kindergarten.'

Complements embedded under volitional or desiderative predicates require the presence of the complex complementizer *żeby*, consisting of the simple complementizer *że* 'that' and the conditional/subjunctive clitic *by*. The clitic has to occur adjacent to *że* and cannot be omitted:

(ii) **Każda matka chce, **że** jej syn chodził do przedszkola.*
every mother want.3SG że her son go.*L*-PTCP.SG.M to kindergarten.GEN
Intended meaning: 'Every mother wants her son to go to the kindergarten.'

Following the generative mainstream literature on Polish complex clauses going back to Tajsner (1989), Willim (1989), Witkoś (1998), Bondaruk (2004), among many others, I take *żeby* to be a complex C-head. Alternatively, one could argue for a more fine-grained C-layer analysis along the lines of Rizzi (1997) and postulate two different structural positions - one for *że* and one for *by* - within the C-domain, as Szczegielniak (1999) does. Alternative analyses are offered by Migdalski (2006; 2010; 2016) and Tomaszewicz (2012). As nothing hinges on whether one compares *jakoby* with *że* or with *żeby*, I restrict myself to the former in the present chapter.

wadliwych kartach.
faulty cards.loc
'The company denied that there were any reports about faulty prepaid cards.'

However, not every *że*-clause can be replaced by a *jakoby*-clause. In other words, the condition proposed above is not bidirectional:

(5) a. Dziwi mnie, **że** były zgłoszenia o
be.amazed.3SG me.ACC that be.L-PTCP.N-VIR.PL reports about
wadliwych kartach.
faulty cards.loc
'I'm amazed/surprised that there were any reports about faulty prepaid cards.'

b. *Dziwi mnie, **jakoby** były zgłoszenia o
be.amazed.3SG me.ACC jakoby be.L-PTCP.N-VIR.PL reports about
wadliwych kartach.
faulty cards.loc

Based on this contrast, we observe that *jakoby*-clauses cannot be embedded under exclamative predicates like *dziwić* (*się*) 'be amazed'/'be surprised'. Such a restriction does not occur with regard to *że*-clauses. A similar conclusion can be drawn as to perception verbs being used metaphorically. Ibarretxe-Antuñano (1999) points out, based on Sweetser (1990), that olfactory verbs, e.g. *smell*, in English, Spanish and Basque can have a non-literal meaning that, in turn, depending on the language can be paraphrased as *trail something*, *suspect*, *guess* or *investigate*. They are often connoted with negative situations, as the following example illustrates:

(6) I smell something fishy about this deal.
(Sweetser 1990: 37)

The Polish olfactory verb *czuć* 'smell' (lit. 'feel') behaves in a similar way. If it is used metaphorically, it means 'suspect' and can embed *że*-clauses:

(7) Jeden z polityków czuje, **że** niebawem wybuchnie wielki
one of:the politicians feel.3SG that soon break:out.3SG huge
skandal na arenie międzynarodowej.
scandal on arena.loc international
'One of the politicians suspects that a huge scandal will soon break out in the international arena.'

Similar to the situation with exclamative predicates outlined above, the use of *jakoby*-clauses leads to ill-formed results:

(8) *Jeden z polityków czuje, **jakoby** niebawem wybuchnie wielki
one of:the politicians feel.3SG jakoby soon break:out.3SG huge
skandal na arenie międzynarodowej.
scandal on arena.loc international

(8) appears to be appropriate only in a context in which the sentence subject, i.e., one of the politicians, literally uttered that a huge scandal will break out. The speaker wants to distance himself/herself from what the politician said by using the complementizer *jakoby*. On the other hand, (8) is infelicitous in the context in which the speaker describes what the politician might suspect without having written or said it. In other words, the content of the proposition must be known to the speaker from a foreign source. This also accounts for why (2) is ungrammatical: Using verbs of seeming, the speaker mainly draws conclusions based on what (s)he has perceived, and not based on what (s)he has heard from others. As *jakoby*-clauses tend to occur in the context of speech/report expressions, they can disambiguate or specify the meaning of a clause-embedding predicate, cf. (9) below:

(9) Niektóre kluby nie wiedzą, **jakoby** zgłaszały
some clubs NEG know.3PL jakoby propose.*L*-PTCP.N-VIR.PL
graczy.
players.ACC
'Some sports clubs admit not knowing that they supposedly proposed players.'
(NKJP, *Gazeta Krakowska*, 25/6/2007; slightly modified by author: ŁJ)

The semi-factive matrix verb *wiedzieć* 'know' is usually used as a verb of retaining knowledge. In (9), the embedded *jakoby*-clause adds an additional layer of meaning to it, turning it into a verbum dicendi.[3] Accordingly, we have to conclude that *że* and *jakoby* as complementizers differ in meaning and that their licensing conditions depend on lexical properties of clause-embedding predicates. Following the well-known classification of embedding verbs proposed in Karttunen (1977), the most frequent *jakoby*-embedders are verbs of one-way communication, e.g. *twierdzić* 'claim', *zaprzeczać*, *dementować* both: 'deny', *powiedzieć* 'say' or *sugerować* 'suggest'.

[3] Reis (1977: 142–148) has already observed for German *wissen* 'know' that it can be used in a similar way.

A final note is in order here concerning the licensing conditions of *jakoby*-clauses. Remarkably, they can also be attached to DPs:

(10) Absurdalne jest [$_{DP}$ twierdzenie]$_i$, [**jakoby** okulary przeciwsłoneczne
absurd be.3SG claim jakoby sunglasses
miały ograniczać widoczność]$_i$.
have.*L*-PTCP.N-VIR.PL restrict.INF visibility.ACC
'The claim that sunglasses supposedly restrict visibility is absurd.'
(NKJP, *Gazeta Ubezpieczeniowa*, 7/3/2006)

In (10), the DP *twierdzenie* 'claim' is derived from the verb *twierdzić* and its content is modified or specified by the following *jakoby*-clause. For the sake of convenience, I restrict myself in the present study to *jakoby*-clauses that are selected by verbs. Currently, there are different technical possibilities for how one could analyze examples as given in (10). For an overview the interested reader is referred to Moulton (2009), Haegeman & Ürögdi (2010), and de Cuba (2017), among many others.

2.2 Previous descriptions

The view on licensing conditions presented in this subsection sharply contrasts with what Taborek (2008: 110–115, 156–157) claims about *jakoby*-clauses:

> Als die letzte Kategorie gilt hier der mit der Subjunktion *jakoby* (und ihren Alternaten *jakby* und *jak gdyby* eingeleitete Komplementsatz in der Subjektfunktion. Die *jakoby*-Sätze werden von Verben des Sagens selegiert und implizieren Zweifel des Sprechers.
> 'As the last category, one should mention here the subjunction *jakoby* (and its alternative subjunctions *jakby* and *jak gdyby*) introducing complement clauses in the subject position. The *jakoby*-clauses are selected by verbs of saying and imply speaker's doubts.' (my translation: ŁJ)
> Taborek (2008: 100–101)

Although Taborek (2008) correctly observes that *jakoby*-clauses are selected by verbs of saying, he does not discuss any appropriate examples from Present-day Polish. Instead, he cites examples from older stages of Polish with *jakoby*-clauses occurring after verbs of seeming. The second problem concerns the replaceability of *jakoby* by *jakby* and *jak gdyby*, both meaning 'as if'. As the following example illustrates, neither *jakby* nor *jak gdyby* can replace *jakoby*:

(11) Firma zaprzeczyła, **jakoby** / ***jakby** / ***jak gdyby**
company deny.*L*-PTCP.SG.F jakoby / as if / as if
były zgłoszenia o wadliwych kartach.
be.*L*-PTCP.N-VIR.PL reports about faulty cards.loc
Intended meaning: 'The company denied that there were supposedly any reports about faulty prepaid cards.'

If one continues (11) with *jakby* or *jak gdyby*, the dependent clause modifies the way the company denied (= adjunct clause), not what the company denied (= complement clause). In other words, the embedded clause headed by *jakby* or *jak gdyby* does not occupy the internal argument position of the matrix verb *zaprzeczać* 'deny'. Instead, it forms an A-bar dependency with the matrix clause, giving rise to a hypothetical comparative interpretation. Independent evidence for this argument follows from the observation that *jakby*- and *jak gdyby*-clauses (contrary to *jakoby*-clauses) cannot modify DPs derived from speech/report expressions:

(12) Absurdalne jest $[_{DP}$ twierdzenie$]_i$, [**jakoby** / ***jakby** / ***jak gdyby**
absurd be.3SG claim jakoby / as if / as if
okulary przeciwsłoneczne miały ograniczać
sunglasses have.*L*-PTCP.N-VIR.PL restrict.INF
widoczność$]_i$.
visibility.ACC
Intended meaning: 'The claim that sunglasses supposedly restrict visibility is absurd.'

Likewise, Wiemer (2005) assumes *jakoby*-clauses to be still embeddable under verbs of seeming. Empirically, this view cannot be upheld, though. I was not able to find solid evidence from Present-day Polish in the *National Corpus of Polish* illustrating the usage of *jakoby*-clauses after verbs of seeming.[4] Based on Łojasiewicz (1992), Wiemer (2005) elaborates on the following example:

[4] I built queries looking for all morphological forms of both perfective and imperfective verbs of seeming; compare, for example, the aspectual pair *zdać się* vs. *zdawać się*. As verbs of seeming are reflexive in Polish, I also built queries with syntactic interveners between the verb and the reflexive pronoun *się*. One of such interveners is, for example, a DP argument marked for the Dative case and stemming from the matrix verb, giving rise to such results as *wydaje mi się* 'it seems to me'. I was able to find only one example from an internet forum:

(i) *Zdaje mi się, **jakoby** Hobbit uważał inaczej.*
seem.3SG me.DAT REFL jakoby Hobbit think.*L*-PTCP.SG.M differently
'It seems to me as if Hobbit would think differently.'

(13) Zdaje mi się, **jakobym** słyszał jakieś wołanie.
seem.3SG me.DAT REFL jakoby.1SG hear.*L*-PTCP.SG.M some crying.ACC
'It seems to me as if I heard someone crying.'
(Łojasiewicz 1992: 105)

It is not clear, however, how old this example is. Moreover, I judge it as ungrammatical and would use the hypothetical comparative complementizer *jakby* 'as if' instead of *jakoby* in this context. In addition, Wiemer (2005: 122–124) notices that *jakoby* clauses can be embedded under speech verbs. However, he discusses only one example with the matrix verb *śnić się* 'dream':[5]

(14) Przeszłej nocy śniło mu się, **jakoby** gruszki z
last night dream.*L*-PTCP.SG.N him.DAT REFL jakoby pears.ACC from
drzewa rwał.
tree.GEN pluck.*L*-PTCP.SG.F
i) 'Last night he dreamt as if he were plucking pears from a tree.'
ii) 'Last night he dreamt that he was supposedly plucking pears from a tree.'
iii) 'Last night he is supposed to have dreamt that he was plucking pears from a tree.'
(Wiemer 2005: 123, ex. 22)

Three issues deserve to be addressed in connection with the example given in (14). Firstly, (14) is taken from the Positivist novel *Nad Niemnem* 'On the Niemen', which was written in the New Polish period in 1888 by Eliza Orzeszkowa. Secondly, *śnić się* 'dream' is not an inherent verb of saying. In essence, dream reports allow a multiplicity of readings. If someone dreams, (s)he can dream that (s)he is someone else. In this sense, one reports what (s)he dreamt about and VP denotes a set of situations in which someone had a dream/dreams. Though *śnić się* 'dream' does not necessarily involve a speech context (for more details on dream reports, see Shanon (1980), Percus & Sauerland (2003) or Kauf (2017)). Thirdly, in my opinion (14) is ambiguous and has three different readings. *Jakoby* can be interpreted either as the hypothetical comparative complementizer 'as if' or as a reported speech complementizer in the Present-day Polish sense. In the former case, it is used because the matrix subject cannot remember what he exactly

(NKJP, an internet forum, 19/8/1999)

Personally, I judge this example as ungrammatical and would use *jakby* instead of *jakoby*.
[5]Glosses and English paraphrases are mine: ŁJ.

dreamt about. He has the impression that he were plucking pears from a tree, but he is not sure. In the latter case, two readings have to be distinguished. It can be either the subject himself who reports about his dreams or someone else who tries to render the content of subject's dreams. Both scenarios are imaginable; see also the discussion in Section 3.

2.3 Syntax

If lexical licensing conditions of *jakoby*-clauses differ from those of *że*-clauses, there must also be syntactic differences between both clause types. Some of them are presented in this section.

2.3.1 Left periphery

One of the differences between *że*- and *jakoby*-clauses refers to movement to the left periphery of the matrix clause. Consider the following pair:

(15) a. Dorota twierdziła, **że** Jan był szczęśliwy.
Dorota claim.*L*-PTCP.SG.F that Jan be.*L*-PTCP.SG.M happy
'Dorota claimed that Jan was happy.'

b. Dorota twierdziła, **jakoby** Jan był szczęśliwy.
Dorota claim.*L*-PTCP.SG.F jakoby Jan be.*L*-PTCP.SG.M happy
'Dorota claimed that Jan supposedly was happy.'

What distinguishes both clause types is that only *że*-clauses can be A-bar-moved to the left periphery. As the following contrast illustrates, movement of *jakoby*-clauses is prohibited:

(16) a. **Że** Jan był szczęśliwy, twierdziła Dorota.
that Jan be.*L*-PTCP.SG.M happy claim.*L*-PTCP.SG.F Dorota
'That Jan was happy, Dorota claimed.'

b. ***Jakoby** Jan był szczęśliwy, twierdziła Dorota.
jakoby Jan be.*L*-PTCP.SG.M happy claim.*L*-PTCP.SG.F Dorota
Intended meaning: 'That supposedly Jan was happy, Dorota claimed.'

At this moment, I have no explanation for why *jakoby*-clauses are banned from a higher structural position in the Polish clause structure. There must be a conflict between the meaning of the complementizer and an information-structural movement.

2.3.2 Future tense form

Another difference is connected to the use of the future auxiliary verb *będzie* 'will'; for its detailed analysis see in particular Błaszczak et al. (2014). Interestingly enough, *jakoby*-clauses cannot combine with *będzie*, whereas no such restrictions occur with regard to *że*-clauses:

(17) a. Dorota twierdziła, **że** Jan będzie biegać codziennie.
Dorota claim.L-PTCP.SG.F that Jan will.3SG run.INF daily
'Dorota claimed that Jan will go jogging every day.'

b. *Dorota twierdziła, **jakoby** Jan będzie biegać codziennie.
Dorota claim.L-PTCP.SG.F jakoby Jan will.3SG run.INF daily
Intended meaning: 'Dorota claimed that Jan will supposedly go jogging every day.'

The questionability of (17b) is surprising in the light of the rigid hierarchy of functional projections developed in Cinque (1999; 2006; 2017):

(18) [*frankly* $\text{Mood}_{\text{speech act}}$ [*fortunately* $\text{Mood}_{\text{evaluative}}$ [***allegedly*** $\mathbf{Mood}_{\mathbf{evidential}}$
[*probably* $\text{Mod}_{\text{epistemic}}$ [*once* T(Past) [***then*** **T(Future)** [*perhaps* $\text{Mood}_{\text{irrealis}}$
[*necessarily* $\text{Mod}_{\text{necessity}}$ [*possibly* $\text{Mod}_{\text{possibility}}$ [*usually* $\text{Asp}_{\text{habitual}}$
[*again* $\text{Asp}_{\text{repetitive(I)}}$ [*often* $\text{Asp}_{\text{freuentative(I)}}$ [*intentionally* $\text{Mod}_{\text{volitional}}$
[*quickly* $\text{Asp}_{\text{celerative(I)}}$ [*already* T(Anterior) [*no longer* $\text{Asp}_{\text{terminative}}$
[*still* $\text{Asp}_{\text{continuative}}$ [*always* $\text{Asp}_{\text{perfect}}$ [*just* $\text{Asp}_{\text{retrospective}}$ [*soon* $\text{Asp}_{\text{proximative}}$
[*briefly* $\text{Asp}_{\text{durative}}$ [*characteristically* $\text{Asp}_{\text{generic/progressive}}$ [*almost* $\text{Asp}_{\text{prospective}}$
[*completely* $\text{Asp}_{\text{SgCompletive(I)}}$ [*tutto* $\text{Asp}_{\text{PlCompletive}}$ [*well* Voice
[*fast/early* $\text{Asp}_{\text{celerative(II)}}$ [*again* $\text{Asp}_{\text{repetitive(II)}}$ [*often* $\text{Asp}_{\text{frequentative(II)}}$
[*completely* $\text{Asp}_{\text{SgCompletive(II)}}$]]]]]]]]]]]]]]]]]]]]]]]]]]]]]

Accordingly, we expect *jakoby* as an evidential complementizer to merge as a functional head in $\text{Mood}_{\text{evidential}}$, meaning that it should be able to take scope over all other functional material associated with lower functional projections including T(Future). This is not the case, though. It still needs to be accounted for why *będzie* is incompatible with *jakoby*-clauses.

2.3.3 Conditional mood

In contrast to *że*-clauses, *jakoby*-clauses cannot contain a verbal head to which the conditional/subjunctive clitic *by* is attached, triggering a counterfactual interpretation of the embedded proposition:

(19) a. Dorota twierdziła, **że** Jan poszedł-**by** do kina.
Dorota claim.*L*-PTCP.SG.F that Jan go.*L*-PTCP.SG.M-SUBJ to cinema.GEN
'Dorota claimed that Jan would have gone to the cinema.'

b. *Dorota twierdziła, **jakoby** Jan poszedł-**by** do kina.
Dorota claim.*L*-PTCP.SG.F jakoby Jan go.*L*-PTCP.SG.M-SUBJ to cinema.GEN
Intended meaning: 'Dorota claimed that Jan would supposedly have gone to the cinema.'

This difference might be due to the fact that *jakoby* as as an evidential complementizer has not been fully bleached yet and that the clitic *by* still contributes to the compositional evidential meaning of what *jakoby* expresses in Present-day Polish. It straightforwardly follows that the second occurrence of *by* appears to be redundant in this context. I will come back to this issue later on.

2.3.4 The discourse particle 'chyba'

According to *Słownik Współczesnego Języka Polskiego* [*'Dictionary of Modern Polish'*] (1998), *chyba* 'presumably' is defined as follows:

> **chyba**: tym słowem mówiący sygnalizuje, że nie wie czegoś dokładnie, nie jest czegoś pewien, ale decyduje się to powiedzieć, sądząc, że to prawda; przypuszczalnie; być może, prawdopodobnie, bodaj;
> **chyba**: using this word, the speaker signals that (s)he doesn't know something exactly, that (s)he is not certain about something, but at the same time (s)he decides to say it, claiming it is true; assumedly; maybe, probably, perhaps; (my translation: ŁJ).
> *Słownik Współczesnego Języka Polskiego* [*'Dictionary of Modern Polish'*] (1998: 117)

Consider the example given in (20), illustrating the use of *chyba* in a declarative clause:

(20) **Chyba** jest pani niesprawiedliwa.
chyba be.3SG lady unjust
'Miss, I think you are unjust.'

(FP, p. 140)

Using the discourse particle *chyba* 'presumably', the speaker establishes a particular common ground relationship among discourse interlocutors. Concretely, the speaker indicates that her/his commitment towards the truth of what is embedded is speculative. Accordingly, I analyze *chyba* as a modifier of assertive speech acts, contributing to a weaker commitment of the speaker to the proposition, cf. Zimmermann (2004; 2011) for a similar analysis of the German discourse particle *wohl*.

(21) Meaning of *chyba*(p):
$[\![chyba\ p]\!] = f^w$ assume(x, p), whereby x = speaker

Usually, it is the speaker who is uncertain about the content of the embedded proposition using *chyba*:

(22) Zamówił piwo. Ale **chyba** mu nie smakuje, bo
order.*L*-PTCP.SG.M beer but *chyba* him.DAT NEG be:tasty.3SG because
ledwie umoczył usta.
barely soak.*L*-PTCP.SG.M lips
'He ordered a beer. But he probably doesn't like it because he barely soaked his lips in it.'

(FP, p. 44)

However, in reported speech the attitude holder can be shifted to the clause subject itself (for more details on discourse particles in shifted contexts, see Döring (2013) and references cited therein):

(23) Adam twierdzi, że piwo mu **chyba** nie smakuje.
Adam claim.3SG that beer him.DAT *chyba* NEG be:tasty.3SG
'Adam claims that he probably doesn't like the beer.'

What is interesting about *jakoby*-clauses is that they cannot license the discourse particle *chyba*, contrary to *że*-clauses:

(24) a. Dorota powiedziała, **że** **chyba** pójdzie do kina.
Dorota say.*L*-PTCP.SG.F that chyba go.3SG to cinema.GEN
'Dorota said that she presumably will go to the cinema.'

b. *Dorota powiedziała, **jakoby chyba** pójdzie do kina.
Dorota say.*L*-PTCP.SG.F jakoby chyba go.3SG to cinema.GEN
Intended meaning: 'Dorota said that supposedly she presumably will go to the cinema.'

The speaker questions the truth value of the embedded proposition using *jakoby*. If we shift the attitude holder to the clause subject, it should be possible to combine *jakoby* and *chyba*, as the latter is not attributed to the speaker. (24b) is ruled out, though. A possible explanation comes from the fact that *chyba* as a speech act modifier takes a wider scope: It involves the matrix subject and its subjective attitude. *Jakoby*, in turn, does not take scope over the matrix subject leading to a clash. This is to be expected if we assume $\text{Mood}_{\text{evidential}}$ to outscope $\text{Mod}_{\text{epistemic}}$, see (18) above.

2.3.5 Modal verb 'musieć' ('must')

It is a well-known fact that modal verbs can occur in embedded environments resulting in a shift of the attitude holder, cf. Hacquard (2006) and Hacquard & Wellwood (2012):

(25) Dorota powiedziała, **że** Jan **musi** być chory.
Dorota say.*L*-PTCP.SG.F that Jan must.3SG be.INF sick
a) deontic: 'Dorota said that Jan has to be sick.'
b) epistemic: 'Dorota said that Jan must be sick (now).'

In (25), the modal verb *musieć* can be interpreted in two different ways. Imagine a situation in which Dorota is a stage director of a play and determines how the stage play should be. According to this interpretation, *musieć* is evaluated against a bouletic modal base and narrowed down by a deontic conversational background. If, on the other hand, Dorota supposes Jan to be ill, but she is not sure about this, *musieć* is interpreted epistemically. In both cases, the attitude holder is the matrix subject, i.e. Dorota. *Jakoby*-clauses restrict the quantification domain of *musieć*:

(26) Dorota powiedziała, **jakoby** Jan **musi** być chory.
Dorota say.*L*-PTCP.SG.F that Jan must.3SG be.INF sick
a) deontic: 'Dorota said that supposedly Jan has to be sick.'
b) ?/*epistemic: 'Dorota said that supposedly Jan must be sick (now).'

It is very hard to imagine a scenario in which *musieć* would be interpreted epistemically, even though the attitude holder has shifted to the matrix subject.[6] Remarkably, this problem disappears as soon as *musieć* is replaced by the existential modal verb *móc* 'can'/'may':

(27) Dorota powiedziała, **jakoby** Jan **może** być chory.
Dorota say.*L*-PTCP.SG.F that Jan can.3SG be.INF sick
a) deontic: 'Dorota said that supposedly Jan is to be allowed to be sick.'
b) epistemic: 'Dorota said that supposedly Jan may be sick (now).'

It still needs to be figured out why the complementizer *jakoby* and the epistemic modal verb *musieć* cannot co-occur.

2.3.6 Matrix subject constraint

If *jakoby*-clauses occupy one of the arguments of a clause-embedding predicate, the matrix subject usually occurs in the third person. 1st and 2nd person subjects, on the other hand, disprefer *jakoby*-clauses:

(28) a. ?Wczoraj powiedział-e-**ś**, **jakoby** pójdziesz dzisiaj do kina.
yesterday say.*L*-PTCP.SG-M-2SG jakoby go.2SG today to cinema.GEN
Intended meaning: 'Yesterday you said that you will supposedly go to the cinema today.'

b. *Wczoraj powiedział-e-**m**, **jakoby** pójdę dzisiaj do kina.
yesterday say.*L*-PTCP.SG-M-1SG jakoby go.1SG today to cinema.GEN
Intended meaning: 'Yesterday I said that I will supposedly go to the cinema today.'

(28a) appears to be appropriate in one specific context. Let assume that A is the speaker, whereas B is the matrix subject. Imagine that B uttered *p* to C, i.e., to

[6] Interestingly enough, this constraint is weakened as soon as the modal verb *musieć* occurs in a complex past tense structure:

(i) *?Dorota powiedziała, **jakoby** Jan **musiał** być chory.*
Dorota say.*L*-PTCP.SG.F that Jan must.*L*-PTCP.SG.M be.INF sick
Intended meaning: 'Dorota said that supposedly Jan must have been sick.'

Still, (i) sounds marked.

another discourse interlocutor, but not to A. It is natural to utter (28a) provided that C reported to A that B is supposed to have said *p*. The incompatibility of the 1st person with *jakoby*-clauses can, in turn, be accounted for by assuming that the speaker cannot question the truth value of what is embedded if *jakoby* presupposes the existence of a foreign information source and if (s)he herself/himself is the information source (see also the discussion in Curnow (2002)). No such restrictions occur with respect to *że*-clauses:

(29) a. Wczoraj powiedział-e-**ś**, **że** pójdziesz dzisiaj do kina.
yesterday say.*L*-PTCP.SG-M-2SG that go.2SG today to cinema.GEN
'Yesterday you said that you will go to the cinema today.'

b. Wczoraj powiedział-e-**m**, **że** pójdę dzisiaj do kina.
yesterday say.*L*-PTCP.SG-M-1SG that go.1SG today to cinema.GEN
'Yesterday I said that I will go to the cinema today.'

Interestingly enough, this constraint is not absolute and depends on the semantics of the clause-embedding verb. It can be overwritten, as soon as the matrix verb is an inherent negative verb, e.g. *zaprzeczać* 'deny':

(30) a. Zaprzeczył-e-**ś**, **jakoby** wygrał-e-ś w lotka.
deny.*L*-PTCP.SG-M-2SG jakoby win.*L*-PTCP.SG-M-2SG in lottery
'You denied that you have supposedly won the lottery.'

b. Zaprzeczył-e-**m**, **jakoby** wygrał-e-m w lotka.
deny.*L*-PTCP.SG-M-1SG jakoby win.*L*-PTCP.SG-M-1SG in lottery
'I denied that I have supposedly won the lottery.'

The use of inherent negative verbs presupposes the existence of a covert negation resulting in $\neg p$. In this context, *p* is known to the speaker from hearsay. Using an inherent negative verb in combination with an *jakoby*-clause opens up the possibility for the speaker to question the validity of *p*.

A final note is in order here about the status of *jakoby* occurring as an evidential complementizer. One of the anonymous reviewers objects that *jakoby* as a complementizer can co-occur with other complementizers, e.g. with *że* 'that', posing a challenge for my account:

(31) Mój przyjaciel mówi, **że** **podobno** / **jakoby** / **rzekomo** faszyści
my friend say.3SG COMP COMP / COMP / COMP fascists
zniszczyli jakieś biblioteki.
destroy.*L*-PTCP.VIR.PL some libraries.
'My friend keeps saying that apparently / allegedly / reportedly fascists

destroyed some libraries.'

The anonymous reviewer assumes (31) to be a case of complementizer doubling, a phenomenon which is taken to be absent in the grammar of Polish in general. I disagree with the view that (31) exemplifies complementizer doubling and analyze *jakoby* as an evidential adverb (see also footnote 1 above and references cited there). There are several arguments showing why *jakoby* 'supposedly' – as well as *podobno* 'apparently' and *rzekomo* 'reportedly' – in (31) cannot be analyzed as complementizers. In what follows, I discuss some of them.

Firstly, neither *podobno* 'apparently' nor *rzekomo* 'reportedly' can introduce embedded clauses:

(32) a. *Mój przyjaciel mówi, **podobno** faszyści zniszczyli jakieś
my friend say.3SG COMP fascists destroy.*L*-PTCP.VIR.PL some
biblioteki.
libraries.

b. *Mój przyjaciel mówi, **rzekomo** faszyści zniszczyli jakieś
my friend say.3SG COMP fascists destroy.*L*-PTCP.VIR.PL some
biblioteki.
libraries.

(32a) and (32b) are only well-formed when *podobno* and *rzekomo* are analyzed as evidential adverbs expressing matrix subject's attitude towards what is embedded. In this case, direct speech complements are embedded, and not subordinate clauses. This mainly follows from concord relations:

(33) a. Świadek twierdzi, **jakoby** morderca był **rzekomo**
witness claim.3SG COMP murderer be.*L*-PTCP.3SG.M reportedly
wysoki.
tall
'The witness claims that allegedly the murderer was reportedly tall.'

b. Świadek twierdzi, **jakoby** morderca był **podobno**
witness claim.3SG COMP murderer be.*L*-PTCP.3SG.M apparently
wysoki.
tall
'The witness claims that allegedly the murderer was apparently tall.'

c. *Świadek twierdzi, **rzekomo** morderca był **jakoby**
witness claim.3SG COMP murderer be.*L*-PTCP.3SG.M allegedly

wysoki.
tall

d. *Świadek twierdzi, **podobno** morderca był **jakoby**
witness claim.3SG COMP murderer be.L-PTCP.3SG.M allegedly
wysoki.
tall

If *jakoby* introduces evidential subordinate clauses as given in (33a) and (33b) taking a propositional scope, it is also possible to use additional evidential adverbs having a narrow scope.[7] Concretely, it is *rzekomo* 'reportedly' in (33a) and *podobno* 'apparently' in (33b) taking scope over the adjective *wysoki* 'tall'. I refer to such cases as evidential concord in the sense claimed by Schenner (2007). However, it is impossible to reverse the order of the evidential expressions. As (33c) and (33d) illustrate, *podobno* and *rzekomo* cannot be employed as complementizers and glossed as COMP, as suggested by the reviewer. Correspondingly, I exclude *podobno* and *rzekomo* from further investigation here.
Secondly, as mentioned above *jakoby*-complements are banned from the matrix prefield position. If *że* 'that' precedes *jakoby*, the embedded clause can move though:

(34) **Że jakoby** Jan był szczęśliwy, twierdziła Dorota.
that allegedly Jan be.L-PTCP.SG.M happy claim.L-PTCP.SG.F Dorota
'That supposedly Jan was happy, Dorota claimed.'

This clearly indicates that *jakoby* is an adverb, not a complementizer.
Thirdly, if a *że*-clause hosts *jakoby*, future reference in the embedded clause itself becomes possible:

(35) a. *Dorota twierdziła, **jakoby** Jan będzie biegać codziennie.
Dorota claim.L-PTCP.SG.F jakoby Jan will.3SG run.INF daily
Intended meaning: 'Dorota claimed that Jan will go jogging every day.'

b. Dorota twierdziła, **że jakoby** Jan będzie biegać
Dorota claim.L-PTCP.SG.F that allegedly Jan will.3SG run.INF
codziennie.
daily
'Dorota claimed that allegedly Jan will go jogging every day.'

[7] Appropriate prosodic contours are required for the concord reading.

Furthermore, conditional mood is also allowed:

(36) a. *Dorota twierdziła, **jakoby** Jan poszedł-**by** do kina.
Dorota claim.*L*-PTCP.SG.F jakoby Jan go.*L*-PTCP.SG.M-SUBJ to cinema.GEN
Intended meaning: 'Dorota claimed that supposedly Jan would have gone to the cinema.'

b. Dorota twierdziła, **że** **jakoby** Jan poszedł-**by** do kina.
Dorota claim.*L*-PTCP.SG.F that allegedly Jan go.*L*-PTCP.SG.M-SUBJ to cinema.GEN
'Dorota claimed that allegedly Jan would have gone to the cinema.'

Lastly, (28b) illustrates that evidential *jakoby*-complements cannot be embedded if the matrix verb is inflected for the first person. No such constraint occurs with regard to the combination of *że* 'that' and *jakoby* 'allegedly':

(37) Wczoraj powiedział-e-**m**, **że** **jakoby** pójdę dzisiaj do kina.
yesterday say.*L*-PTCP.SG-M-1SG that allegedly go.1SG today to cinema.GEN
'Yesterday I said that I will supposedly go to the cinema today.'

(37) convincingly demonstrates that *jakoby* as an evidential adverb can be in the scope of the declarative complementizer *że* 'that'.
Finally, the diachrony of Polish provides abundant evidence showing that *jakoby* 'supposedly' as an evidential adverb came into being in Middle Polish, whereas *jakoby* as a complementizer existed already in the early Old Polish period.

In other words, the co-occurrence of *że* and *jakoby* does not instantiate complementizer doubling. Instead, they ought to be analyzed as a declarative complementizer and an evidential adverb, respectively. In this context, the same reviewer asks what the difference is between evidential *jakoby*-complements, on the one hand, and complement clauses headed by the complementizer *że* 'that' and containing the evidential adverb *jakoby*, on the other hand. Importantly, the main difference refers to embedding restrictions and selection.[8] As illustrated in Section 2.1 above, *jakoby*-complements are not embeddable under, for example,

[8] As there are many structural differences between *jakoby* used as a complementizer and as an adverb, it seems reasonable to assume the restrictions on the use as a complementizer to be syntactic by nature. I thank Todor Koev for drawing my attention to this issue.

exclamative verbs. This restriction disappears as soon as a *że*-complement clause contains the evidential adverb *jakoby* 'allegedly':

(38) a. *Dziwi mnie, **jakoby** były zgłoszenia o
be.amazed.3SG me.ACC jakoby be.*L*-PTCP.N-VIR.PL reports about
wadliwych kartach.
faulty cards.loc
Intended meaning: 'I'm amazed that there supposedly were any reports about faulty prepaid cards.'

b. Dziwi mnie, **że jakoby** były zgłoszenia
be.amazed.3SG me.ACC that allegedly be.*L*-PTCP.N-VIR.PL reports
o wadliwych kartach.
about faulty cards.loc
'I'm amazed that there allegedly were any reports about faulty prepaid cards.'

Based on the syntactic differences between *jakoby*- and *że*-clauses pointed out above, one needs to examine semantic properties of the complementizer *jakoby*.

2.4 Semantics

2.4.1 Speaker commitment

Cross-linguistically, there are two types of reportatives, depending on whether they involve some kind of speaker commitment to the reported proposition, cf. Faller (2011), Kratzer (2012), Murray (2017), among many others:

(39) a. **Given the rumour**, Roger must have been elected chief (#but I wouldn't be surprised if he wasn't).
b. **According to the rumour**, Roger must have been elected chief (but I wouldn't be surprised if he wasn't).
(Faller 2011: 679)

Jakoby clearly does not require any degree of speaker commitment (for a possible analysis of similar cases cross-linguistically, see AnderBois (2014)):

(40) Mówi się, **jakoby** Jacek został wybrany na
say.3SG REFL jakoby Jacek PASS.AUX.*L*-PTCP.SG.M elect.PTCP.M on

naczelnika, ale ja w to nie wierzę.
chief.ACC but I in this NEG believe.1SG
'It is said that supposedly Jacek was elected chief, but I don't believe that.'
(Jędrzejowski & Schenner 2013: 14)

In this respect, Polish *jakoby* patterns with the English phrase *according to* as well as with the reportative suffix *=si* in Cuzco Quechua. The speaker using the reportative morpheme *=si* has the possibility of not having any opinion on the truth of *p* (for more details see Faller (2011)):[9]

(41) Pay-kuna=**s** ñoqa-man=qa qulqi-ta muntu-ntin-pi saqiy-wa-n,
(s)he-PL=REP I-ILLA=TOP money-ACC lot-INCL-loc leave-1O-3
mana-má riki riku-sqa-yki ni un sol-ta centavo-ta=pis
not-IMPR right see-PTCP-2 not one Sol-ACC cent-ACC=ADD
saqi-sha-wa-n=chu.
leave-PROG-1O-3=NEG
'They left me a lot of money, (but) that's not true, as you have seen, they didn't leave me one sol, not one cent.'
(Faller 2011: 679, ex. 37)

Following Kratzer (2012) and Faller (2011), I construct a modal base based on the contents of relevant reports giving rise to an *informational* conversational background. Such conversational backgrounds represent the information conveyed by reports and other sources of information:

(42) $f_r(w) = \{p \mid p \text{ is the content of what is said in } w\}$

2.4.2 Dubitativity

Jakoby contributes a dubitative component. There is a clear difference between *jakoby*-clauses and regular conditional/subjunctive *że*-clauses as complements to speech verbs. If the speaker wants to distance herself/himself from the content of the reported proposition, *jakoby* has to be used instead of a regular complement clause:

(43) a. Anna twierdzi, **jakoby** wygrała w lotka.
Anna claim.3SG jakoby win.L-PTCP.SG.F in lottery
'Anna claims to have won the lottery.'

[9] This sharply contrasts with the reportative morpheme *ku7* in St'át'imcets, as reported by Matthewson et al. (2007). Accordingly, *ku7* patterns with English *given that*.

b. *Anna twierdzi, **że** wygrała-**by** w lotka.
Anna claim.3SG that win.L-PTCP.SG.F-SUBJ in lottery
Intended meaning: 'Anna claims that she would have won the lottery.'

2.4.3 Negation

Similar to other evidential expressions attested cross-linguistically, *jakoby* cannot be under the scope of a negation marker. It takes a wide scope:

(44) Firma twierdziła, **jakoby nie** było zgłoszeń o
company claim.L-PTCP.SG.F jakoby NEG be.L-PTCP.SG.N reports about
wadliwych kartach. 'The company claimed that there supposedly
faulty cards.loc
weren't any reports about faulty prepaid cards.'

a) The speaker has reportative evidence that there have not been any reports about faulty prepaid cards.

b) #The speaker does not have reportative evidence that there have not been any reports about faulty prepaid cards.

In this regard, *jakoby* patterns with reportative expressions attested in Cheyenne, St'át'imcets or Cuzco Quechua; cf. (45) for Cheyenne:

(45) É-sáa-némené-he-**sėstse** Annie.
3-not-sing-NEG_{AN}-REP.3SG Annie
a) 'Annie didn't sing, they say.'
b) #'I didn't hear that Annie sang.'
c) #'Annie sang, they didn't say.'

(Murray 2017: 29, ex. 2.56b)

2.5 Interim summary

What we have seen so far is that *jakoby*-clauses radically differ from complement clauses introduced by the declarative complementizer *że* 'that' in Present-day Polish. The former are much more restricted than the latter, not only with respect to their licensing conditions but also with respect to their syntactic and semantic properties. As it turns out, these differences follow from the compositional meaning of the complementizers in question (cf. Moulton (2009)). Table 1 furnishes the main differences between both clause types:

Table 1: Selected differences between *jakoby*-clauses and *że*-clauses in Present-day Polish

PROPERTY	*że*-clauses	*jakoby*-clauses
verbs of seeming	+	-
exclamative verbs	+	-
left periphery	+	-
future tense	+	-
conditional mood	+	-
discourse particle *chyba* 'presumably'	+	-
modal verb *musieć* 'must'	+	-
matrix subject constraint	-	+
dubitativity	-	+

In what follows, I give an overview of the way *jakoby*-clauses could be used in older stages of Polish. Having described the usage and the distribution of *jakoby* in individual historical periods, I analyze its semantic change.

3 *Jakoby*-clauses in the history of Polish

Based on Klemensiewicz (2009), Walczak (1999), and Dziubalska-Kołaczyk & Walczak (2010), I distinguish the following language stages in the history of Polish:

Table 2: Historical stages of Polish

Language period	Abbreviation	Time period
Old Polish	OP	till 1543
Middle Polish	MP	1543–1765
New Polish	NP	1765–1939
Present-day Polish	PDP	since 1939

Dziubalska-Kołaczyk & Walczak (2010: 823) summarize the most important reasons for assuming this classification as follows:

> The Old Polish period is assumed to have terminated in 1543 with the publication of all the bills of a parliamentary session for the first time in Polish. Thus, the year 1543 marks the introduction of Polish as an official language of documents beside Latin. Additionally, it was in the same year that the first popular literary piece written in Polish was published. It was *Krótka rozprawa między trzema osobami: Panem, Wójtem i Plebanem* ('a short debate among three persons: a lord, a commune head and a pastor'), by Mikołaj Rej, who was the first Polish Renaissance writer writing exclusively in Polish. Middle Polish lasted till 1795 - the election year of king Stanislaus August Poniatowski and symbolic beginning of the period of Enlightenment. The outbreak of the World War II marks the end of the New Polish period and beginning of Modern Polish.

As it turns out, the proposed classification is to be traced back to historical events in the first instance. For major system-internal changes being distinctive of a particular language period, the interested reader is referred to the references cited above.

3.1 Etymology

Jakoby is a typical example of head adjunction. Its origin is traced back to the preposition *jako* 'as' and the conditional/subjunctive clitic *by* ≈'would':

(46) a. Od 18 lat pracuje **jako** księgowy.
from 18 years work.3SG as public:servant
'Has has been working as public servant for 18 years.'
(NKJP, *Tygodnik Podhalański*, 31/1999)

b. Zdecydowaliśmy, **by** zorganizować akcję wśród harcerzy.
decide.L-PTCP.VIR.1PL SUBJ organize.INF action.ACC among scours
'We decided to organize an action among the scouts.'
(NKJP, *Dziennik Zachodni*, 17/8/2002)

The conditional/subjunctive clitic *by*, in turn, is traced back to *by*, i.e. 3rd person singular aorist of the Proto-Slavic predicate *byti* 'be'; for its diachrony, see in particular Migdalski (2006; 2010; 2016) and Willis (2000). I analyze it in (46b) as

a complementizer.[10],[11]

[10]Berit Gehrke (pc.) pointed out to me that *by* in Czech can never be used as a complementizer. This might explain why (3b) is ungrammatical. If neither *jako* nor *by* merge as C-heads, the development into a hearsay complementizer is blocked.

[11]One of the anonymous reviewers points out that "*by* is never a complementizer in Polish. It is a conditional/subjunctive auxiliary, and it may occur in the complementizer position only when it incorporates into true complementizers or conjunctions (e.g. *aby* or *żeby* 'that'). So it is not only Czech that does not use *by* as a complementizer, the same holds for Polish." It is not clear what syntactic position *by* occupies in (46b). Following Migdalski (2006), *by* originates in MoodP below TP. On the one hand, we can assume it to be base-generated in MoodP and to remain in-situ in (46b). But on the other hand, there is no evidence showing that *by* in (46b) cannot be associated with the CP layer occupying the C-head position. According to Migdalski (2016: 171), "[a]ll the examples that require encliticization of the auxiliary clitic *by*, which may occur in second position immediately following the complementizer express some kind of non-indicative Force-related meaning, such as hypothetical counterfactual conditionality, potentiality, or optative mood." Tomić (2000, 2001) treats such clitics as operator clitics, as they scope over the entire proposition. And this is what we observe in (46b), too. The embedded clause is a complement clause of the perfective verb *zdecydować* 'take a decision' expressing purposiveness. This indicates that the declarative complementizer *że* 'that' may have been dropped, that the clitic *by* took over its function and, finally, that it has frozen as a C-head:

(i) *Zdecydowaliśmy, **żeby** zorganizować akcję wśród harcerzy.*
decide.L-PTCP.VIR.1PL COMP organize.INF action.ACC among scours
'We decided to organize an action among the scouts.'

This scenario is not surprising at all in the history of Polish because *by* incorporated into *jako* forming together the hearsay complementizer *jakoby* being a clear C-head. In other words, *by* is eligible for the C-head position. At this moment, I am not aware of any arguments speaking against *by* being base-generated as a C-head and establishing a subordinating relation between the matrix clause and the embedded clause. Notably, there is one strong counter argument against the view that *by* cannot be used as a complementizer. In complement clauses under desiderative/volitional predicates *by* has to occur adjacent to the declarative complementizer *że* 'that', i.e. it occurs within the CP-domain (see also footnote 2 above). What is interesting in this context is the fact that *że* 'that' can be deleted. It is then *by* which introduces the embedded clause and marks its illocutionary force as well its subordinate status:

(ii) *Każda matka chce, **żeby** jej syn chodził do przedszkola.*
every mother want.3SG COMP her son go.L-PTCP.SG.M to kindergarten.GEN
'Every mother wants her son to go to the kindergarten.'

Concretely, the view that *by* is disallowed from being a C-head introducing embedded clauses in Polish is not correct.

3.2 Old Polish (until 1543)

Already in OP, *jakoby*[12] fulfills miscellaneous functions. To determine its polyfunctionality, I extracted and analyzed 262 examples containing *jakoby* from the *PolDi* corpus.[13] Its distribution is given in Table 3:

Table 3: The use of *jakoby* in the *PolDi* corpus

adverb	XP *jakoby* XP	DP complement	adverbial clause	argument clause
71 (27%)	93 (36%)	3 (1%)	85 (32%)	10 (4%)

The label 'adverb' refers to all cases in which *jakoby* is used as an adverb, see also the example in (i) above. The question of whether it could have different meanings in OP still needs to be addressed. I am not concerned with this use of *jakoby* in this chapter. In 93 cases *jakoby* combines and compares two phrases, for example two DPs, two PPs or a DP with a PP. In this function, *jakoby* is comparable with English *like*. The next example shows a combination of two DPs:

(47) widziałem [$_{DP}$ Ducha zstępującego] **jakoby** [$_{DP}$ gołębicę s
see.*L*-PTCP.M.1SG Holy:Spirit descending jakoby dove from
nieba]
heaven
'I saw the Holy Spirit descending from heaven like a dove'
(EZ, 6r: 7)

PDP *jakoby* cannot compare one DP with another DP. Instead, *jakby* 'as if' has to be used:

(48) a. Urządzili tam sobie [$_{DP}$ coś] **jakby** [$_{DP}$
set:up.*L*-PTCP.VIR.3PL there REFL.DAT something jakby

[12] Two alternative orthographic variants of *jakoby* existed in older stages of Polish: i) *jako by* and ii) *kakoby*. For methodological reasons, I ignore both variants in this study.

[13] *PolDi* is a collection of texts from Polish language history. 40 texts, both from Old and Middle Polish, are supposed to be annotated and integrated into the ANNIS search engine. Unfortunately, I was not able to find any information about how large the corpus is in terms of word counts. According to my understanding, 22 texts are currently searchable. The 262 examples stem from these 22 texts. However, in this section I elaborate only on cases from OP.

klub].
club
'There, they have set up something like a club.'
(NKJP, *Dziennik Zachodni*, 30/12/2009)

b. *Urządzili tam sobie [$_{DP}$ coś] **jakoby**
set:up.*L*-PTCP.VIR.3PL there REFL.DAT something jakoby
[$_{DP}$ klub].
club
Intended meaning: 'There, they have set up something like a club.'

When and under what circumstances *jakby* replaced *jakoby* in the history of Polish still needs to be investigated.

The next label – 'DP complement' – includes all cases in which a DP is modified by a *jakoby*-clause. In all three attested cases the modified DP is related to a verb of speech: *wzmianka* 'mention', *rada* 'advise', and *krzyk* 'scream', see also the example given in (10) and the discussion in Section 2.1. The first example I came across includes the DP *wzmianka* 'mention' and stems from MP. I will not discuss it here. The last two examples come from late OP (around 1500) from *Rozmyślania przemyskie* 'The Przemyśl Meditation':[14]

(49) a. a zatem [$_{DP}$ krzyk] wielki pobudził wszytek dwor,
and thus scream huge wake.up.*L*-PTCP.SG.M all court
jakoby krol już umarł
jakoby king already die.*L*-PTCP.SG.M
'and thus a loud scream woke up all the court that the king supposedly died already'
(*PolDi*, *Rozmyślania przemyskie*, ≈1500, 92)

b. jako licemiernicy Żydowie z biskupy uczynili [$_{DP}$
as duplicitous Jews from bishop.GEN do.*L*-PTCP.VIR
radę], **jakoby** umęczyli Jesukrysta
advise.ACC jakoby harass.*L*-PTCP.VIR Jesus Christ
'as duplicitous Jews they followed the bishop's advice by supposedly killing Jesus Christ'
(*PolDi*, *Rozmyślania przemyskie*, ≈1500, 298)

[14] The example (49a) is ambiguous. Out of the blue, it can be interpreted either as an adjunct clause or as an argument clause. A further context, however, disambiguates its interpretation.

In addition, *jakoby* could also introduce comparative hypothetical adverbial clauses (= 'adverbial clause' in Table 3):

(50) ja na tem świecie **tako** tobie służył, **jakoby**-ch ci
I on this world so you.DAT serve.*L*-PTCP.SG.M jakoby-AOR you.DAT
swoje duszy nalazł zbawienie
my soul find.*L*-PTCP.SG.M salvation
'I was serving you in this world to the extent that my soul would find salvation'
(KG, *Kazanie I: Na Boże Narodzenie*, 20–21)

As (50) exemplifies, OP *jakoby*-clauses could modify the matrix clause without being an argument of the matrix verb. Concretely, they could merge as modal adjunct clauses being often linked with a degree correlate occurring in the matrix clause, cf. *tako* 'so' in (50). In PDP, this clause type is headed by the complementizer *jakby* 'as if':

(51) Wszyscy zachowują się **tak**, **jakby** chodziło o napad na
all behave.3PL REFL so as if go.*L*-PTCP.SG.N about assault on
bank.
bank
'Everyone is behaving as if it were a bank robbery.'
(NKJP, *Samo życie*, episode 237)

The use of *jakoby* in such contexts is not possible any longer:

(52) *Wszyscy zachowują się **tak**, **jakoby** chodziło o napad na
all behave.3PL REFL so jakoby go.*L*-PTCP.SG.N about assault on
bank.
bank
Intended meaning: 'Everyone is behaving as if it were a bank robbery.'

Finally, as has been illustrated in Section 1, *jakoby* could introduce comparative hypothetical argument clauses after verbs of seeming. For the sake of convenience, I repeat the example given in (1a) as (53) below:

(53) iżeć się jest ludziem na ziemi tako było
that REFL be.3SG people.DAT on earth.loc so be.*L*-PTCP.SG.N
widziało, **jakoby** się ono na nie obalić było
seem.*L*-PTCP.SG.N jakoby REFL it on them.ACC slay.INF be.*L*-PTCP.SG.N

chciało
want.*L*-PTCP.SG.N
'that it seemed to the people on earth as if it wanted to slay all of them'
(KG, *Kazanie I: Na Boże Naordzenie*, 26–27)

In Table 3, I refer to cases like in (53) as 'argument clauses'. What is important here is that (53) is one of the oldest examples stemming from early OP. In late OP *jakoby*-clauses began to be embedded under other clause-embedding verbs. An overview is given in Table 4:

Table 4: The distribution of *jakoby*-clauses as argument clauses in OP based on the data extracted from the *PolDi* corpus

verbs of seeming	verbs of thinking	verbs of speech/report
3	5	2

The occurrences with verbs of seeming are the oldest ones. Around 1500, verbs of thinking and verbs of speech/report started to occur with *jakoby*-clauses:

(54) od tego dnia myślił, **jakoby** ji za trzydzieści
from this day think.*L*-PTCP.SG.M jakoby him.ACC for thirty
pieniędzy przedał
money sell.*L*-PTCP.SG.M
'from this day on he thought that he would have sold him for 30 silver coins'
(*PolDi*, *Rozmyślania przemyskie*, ≈1500, 479)

(55) a. powiadał przed nim, **jakoby** od Cesarza
say.*L*-PTCP.SG.M.HAB before him.DAT jakoby from Emperor
uciekł
run:away.*L*-PTCP.SG.M
'he used to tell him that he had supposedly run away from the Emperor'
(*PolDi*, *Pamiętniki janczara*, 1496–1501, 100:3)

b. już Żydowie wielką nieprzyjaźń przeciw jemu
already Jews huge inhospitableness against him.DAT

mieli smawiając się, **jakoby** go ubili
have.L-PTCP.VIR conspiring REFL jakoby him.ACC kill.L-PTCP.VIR
'already Jews had a hostile attitude against him and conspired that they would supposedly kill him'
(*PolDi*, *Rozmyślania przemyskie*, ≈1500, 379)

Remarkably, in PDP *myśleć* 'think' is not inclined to occur with *jakoby*-clauses, as it is not a classical verb of speech. Though, there is one specific context in which someone renders someone else's thoughts reporting on what other persons (might) think. Although I was not able to find any appropriate corpus example, the following sentence sounds well-formed but marked a bit:[15]

(56) ?Myśli, **jakoby** jest najlepszy.
think.3SG jakoby be.3SG best
'He think that he would be the best.'

Another possibility to interpret the five cases with verbs of thinking would be to analyze them as verbs of seeming in a broader sense. This would explain the expansion of *jakoby*-clauses after verbs of seeming to other clause-embedding verb classes. To what extent both classes are related and whether this link is conceptually reasonable remains an open issue. What is more striking with regard to the development of *jakoby*-clauses is their use after verbs of speech, *powiadać* 'keep saying' in (55a) and *smawiać się* 'conspire' in (55b). In this respect, late OP does not deviate from PDP. As it turns out, not much changed in MP.

3.3 Middle Polish (1543–1765)

The situation in MP resembles the picture of how *jakoby* was used in OP. In general, I extracted 162 cases from the *KorBa* corpus, also known as *The Baroque Corpus of Polish*.[16] An overview of how *jakoby* was used in MP is given in Table 5:

[15] One of the anonymous reviewers remarks that (56) improves when the speaker objects to what the matrix subject claims:

(i) *Myśli, **jakoby** jest najlepszy, ale ja w to nie wierzę.*
think.3SG jakoby be.3SG best but I in this NEG believe.1SG
'He thinks that he would be the best, but I don't believe this.'

I agree with this view and share the same intuition.

[16] *KorBa* contains historical texts from the 17th and 18th centuries, consists of 718 texts, counts over 10 million word forms, and is available for free.

Table 5: The use of *jakoby* in the *KorBa* corpus

adverb	XP *jakoby* XP	DP complement	adverbial clause	argument clause
26 (16%)	27 (17%)	3 (2%)	86 (53%)	20 (12%)

Two major language changes can be observed. In what follows, I briefly comment on them.

Firstly, the use of *jakoby* as a comparative particle decreases (37% in OP vs. 17% in MP), whereas as an adverbial clause complementizer it is still often used. What should be kept in mind, though, is that *jakoby* does not always introduce hypothetical comparative clauses; in some cases, it can also introduce purpose clauses:

(57) Tak trzeba Rzemień ciągnąć / **jakoby** się nie zerwał
so need belt.ACC pull.INF / jakoby REFL NEG peter:away.*L*-PTCP.SG.M
'One needs to pull the belt in such a way as to not break it off'
(*KorBa*, *Proverbium polonicorum*, 1618)

I leave it as an open question here what kinds of adverbial clauses *jakoby* could introduce in older stages of Polish.

Secondly – and more importantly – the use of *jakoby*-clauses as argument clauses increases (4% in OP vs. 12% in MP). Among 20 examples, different classes of clause-embedding verbs can be attested:

Table 6: The distribution of *jakoby*-clauses as argument clauses in MP based on the data extracted from the *KorBa* corpus

verbs of seeming	verbs of thinking	verbs of speech/report
2	1	17

Selected examples follows; (58a) for *zdać się* 'seem', (58b) for *myślić* 'think' and (58c) for *mniemać* 'suppose':

(58) a. zdało się im / **jakoby** się wielkie wzruszenie
seem.*L*-PTCP.SG.N REFL them.DAT / jakoby REFL huge move

na morzu było stało;
on sea.loc be.*L*-PTCP.SG.N happen.*L*-PTCP.SG.N
'it seemed to them as if something huge would have moved on the sea;'
(*KorBa*, *Dyszkursu o pijaństwie kontynuacja*, 1681)

b. począł myślić / **jakoby** siebie i towarzystwo
begin.*L*-PTCP.SG.M think.INF / jakoby REFL.ACC and company.ACC
z niewoli wyrwać
from bondage.GEN take:away.INF
'[he] began to think as if he would have the intention to rescue himself and the company'
(*KorBa*, *Opisanie krótkie zdobycia galery przedniejszej aleksandryjskiej*, 1628)

c. iż mniemali / **jakoby** Zona torrida miała
that suppose.*L*-PTCP.VIR / jakoby Zona torrida have.*L*-PTCP.SG.F
być dla zbytniego gorąca
be.INF for too:him hot
'that [they] supposed that supposedly Zona torrida would be too hot for him'
(*KorBa*, *Relacje powszechne*, part I, 1609)

Similar to the situation in the late OP period, *jakoby* can be used as a hearsay complementizer in MP. As for embedding verbs, verbs of speech or report definitely outnumber verbs of seeming. What is different in MP in comparison to what we have observed in OP is the expansion of argument *jakoby*-clauses to other verb classes. In the next example, the internal argument of the transitive verb *czytać* 'read' is occupied by a *jakoby*-clause:

(59) listy (…), w których czytał, **jakoby** (…) W.Ks.L.
letters (…) in which read.*L*-PTCP.SG.M jakoby (…) W.Ks.L
miał się już ożenić w Śląsku
have.*L*-PTCP.SG.M REFL already get:married.INF in Silesia
'letters in which he could read that supposedly W.Ks.L would have already gotten married in Silesia'
(*KorBa*, *Pamiętnik z czasów Jana Sobieskiego*, between 1690 and 1696)

Uttering (59) the speaker is reporting on what the clause subject was reading. This context enables the speaker to turn the verb *czytać* 'read' into a verb of report.

At the same time, the speaker may question either the claim that someone got married or the observation that the clause subject was reading this claim. Both interpretations are conceivable.

To test for statistical reliability, statistical tests were run. The two language change processes described above were analyzed by means of generalized linear modeling using the package *lme4* (Bates et al. 2012) in R (R Core Team 2012). Table 7 shows the results and the last column lists the *p*-values.

Table 7: Summary of the relevant factors in the generalized linear model

	Estimate	Std. Error	*z* value	Pr(>|*z*|)
(Intercept)	−1.6094	0.2108	−7.634	2.27×10^{-14}
XP *jakoby* XP	1.0121	0.2472	4.094	4.24×10^{-5}
(Intercept)	−1.9601	0.2388	−8.207	2.27×10^{-16}
argument clause	−1.2667	0.4013	−3.157	0.00159

The relevant factors, i.e. language period as an independent variable and complement type as a dependent variable, were coded to test whether differences between both language periods are significant. As it turned out, the tests statistically confirmed the diachronic observations.[17]

3.4 New Polish (1765–1939)

The use of *jakoby* in NP remains constant. Its all main functions attested in OP and MP still occur in the 19th century. I extracted and analyzed a sample of 85 *jakoby*-cases from *NewCor*, a *Corpus of 1830–1918 Polish*. Table 8 portrays the picture of how *jakoby* is used:

Table 8: The use of *jakoby* in the *NewCor* corpus

adverb	XP *jakoby* XP	DP complement	adverbial clause	argument clause
20 (24%)	12 (14%)	31 (37%)	14 (16%)	8 (9%)

Interestingly enough, *jakoby*-clauses modifying DPs dominate. They usually modify such DPs as *pogłoska* 'rumour', *wieść* 'news', *wiadomość* 'message', *twierdzenie*

[17] I thank Frederike Weeber who helped me with the statistics.

'claim' , *mniemanie* 'opinion' or *zarzut* 'accusation'. All of the DPs are related to verbs of speech/report. *Jakoby* can still occur as a hypothetical comparative element, either comparing two phrases or introducing adverbial *as-if*-clauses. In eight cases, *jakoby*-clauses occupy an argument of a clause-embedding predicate:

Table 9: The distribution of *jakoby*-clauses as argument clauses in NP based on the data extracted from the *NewCor* corpus

verbs of seeming	verbs of thinking	verbs of speech/report
2	0	6

I could not find any examples with verbs of thinking. Of course, more data needs to be analyzed in order to be able to exclude this class altogether. In two cases, the *jakoby*-clause is an argument of a *seem*-verb, as the next example shows:

(60) zdaje się nam, **jakoby** wzory te były mędrsze
seem.3SG REFL us.DAT jakoby patterns these be.*L*-PTCP.N-VIR smarter
od nas
from us
'it seems to us as if these patterns would be smarter than us'
(*NewCor*, *O związku pomiędzy światłem i elektrycznością*, 1890)

The other cases illustrate the use of *jakoby*-clauses after verbs of speech/report, known from PDP:

(61) i nie można też było twierdzić, **jakoby** łacińscy biskupi
and NEG can.PRED also be.*L*-PTCP.SG.N claim.INF jakoby Latin bishops
stróżami byli Kościoła ruskiego
guards.INS be.*L*-PTCP.VIR Church.GEN Ruthenian
'and one couldn't claim either that supposedly Latin bishops would have been guards of the Ruthenian Church'
(*NewCor*, *Sprawa ruska na Sejmie Czteroletnim*, 1884)

The availability of *jakoby*-clauses after of verbs of seeming in NP might account for why Łojasiewicz (1992), Wiemer (2005) and Taborek (2008) still cite their occurrence in PDP. Since their incompatibility appears to be a very young development in the history of Polish, one would not be surprised to come across similar examples from the beginning of the 20th century.

3.5 Interim summary

In this section, we have seen that *jakoby* developed its main functions already during the OP period. As far as argument *jakoby*-clauses are concerned, they started to occur after verbs of speech/report in late Old Polish and ceased to be used after verbs of seeming in Present-day Polish:

Table 10: The development of *jakoby*-argument clauses in the history of Polish

Language period	argument clauses (verbs of seeming)	argument clauses (verbs of speech/report)
early Old Polish (until 1450)	+	–
late Old Polish (1450–1543)	+	+
Middle Polish (1543–1765)	+	+
New Polish (1765–1939)	+	+
Present-day Polish (since 1939)	–	+

Along with the latter change, *jakoby* also ceased to occur as a (hypothetical) comparative particle being replaced by *jakby* 'as if'. The question of how *jakoby* developed from a hypothetical comparative complementizer into a hearsay complementizer is addressed in the next section.

4 Reanalysis

The main objective of this section is to reanalyze the development of *jakoby* in the history of Polish. The main focus is on *jakoby*-clauses being used after verbs of seeming and after verbs of speech/report. I aim at identifying constant factors in the lexical meaning of *jakoby* over time and, at the same time, at locating the aspects responsible for the semantic change that *jakoby* underwent.

As detailed in Section 3, *jakoby* can be traced back to the fusion of the comparative preposition *jako* and the conditional/subjunctive clitic *by*. I argue that these components contributed two semantic seeds that determined the further development of *jakoby*: i) equative comparison, ii) non-factivity. I take *jako* 'as' to be lexical anchor for an equivalence relation – along the lines proposed by Umbach & Gust (2014) – between the matrix clause and the embedded clause. The role of *by* is to mark non-factivity giving rise to a counterfactual reading, as

defined in Bücking (2017: 988)[18]:

Table 11: Etymological composition of *jakoby*

jako 'as'	*by*
equative meaning	subjunctive/non-factive meaning

For Old Polish, the combination of these two elements is sufficient to explain the semantic contribution of *jakoby* itself. While component i) enabled the use of *jakoby* in adjunct clauses, component ii) paved the way for the dubitative meaning that *jakoby* contributes in complement clauses of verbs of speech/report.[19] In early Old Polish, *jakoby* heads complement clauses of *seem*-type verbs that express indirect inferential evidence. The logical structure of these sentences is as follows, where *p* represents the proposition expressed by the embedded clause:

(62) [*seem* [*jakoby p*]]

The central question to be asked here is how these three elements, i.e. the clause-embedding verb, the complementizer, and the embedded proposition play together to yield the final meaning 'it seems as if *p*'. The clause-embedding verb *seem* expresses indirect evidence, indicating that the speaker has some body of evidence X from which it follows – or which at least strongly suggests – that *p* is true. The general idea for the case of *seem* can be thus expressed as follows:

[18] Bücking (2017) examines hypothetical comparative clauses in German and distinguishes four different readings: i) extensional, ii) generic, iii) counterfactual, and iv) epistemic. All of them were available with *jakoby* in Old Polish, though it was the counterfactual reading that gave rise to the development of *jakoby* into a hearsay complementizer.

[19] One of the anonymous reviewers objects that the reanalysis concerns conditionality and does not involve subjunctive meaning as proposed here. As *by* can express both conditionality and subjunctive meaning, it is not surprising that the anonymous reviewer argues for one of the categories. What *by* does is that it introduces a set of alternative worlds, a hallmark of both conditionality and of subjunctive meaning. It is conditionality in Old Polish *jakoby*-complements embedded under verbs of seeming that is crucial for interpretative purposes (cf. Stalnaker (1968), Lewis (1973), von Fintel (2011), and in particular Bücking (2017)). But if *jakoby*-clauses are complements to verbs of saying or reporting, it is rather a subjunctive meaning of *by* absorbing the illocutionary force in the sense claimed by Truckenbrodt (2006). It has been cross-linguistically observed that embedded clauses in reporting contexts are usually marked by subjunctive mood; for an overview, see Becker & Remberger (2010), Fabricius-Hansen & Sæbø (2004), Portner (1997, 2018), Sode (2014), among many others. *Jakoby*-complements in Present-day Polish ought to be treated as cases of reportive mood, and not as cases of conditionality.

(63) $[\![seem]\!]^{c,w} = \lambda p.$ speaker(c) has in w inferential evidence that p is true in w

which can be modeled in the Kratzerian style along the lines of Faller (2011) as follows:

(64) $[\![seem]\!]^{c,w} = \lambda p.$ the content(c) provides a perceptual or epistemic modal base B and a doxastic ordering source S such that for all worlds v in $min_{S(w)}(\cap B(w))$ it holds that p is true in v

If the matrix verb already expresses indirect evidence, what is the contribution of *jakoby*? Confer the following examples:

(65) a. Donald seems to be in Singapore.
b. It seems that Donald is in Singapore.
c. It seems as if Donald is in Singapore.
d. It seems as if Donald were in Singapore.

In a nutshell, the contribution of *jakoby* is to map (65b)-type meanings to (65d)-type meanings, whereas (65d) uncovers the two original components of *jakoby* pointed out above, i.e. equative comparison and counter-factual meaning. The basic idea is stated as follows:

(66) $[\![seem\ as\ if]\!]^{c,w} = \lambda p.$ the information (evidence) that speaker(c) has in w is **just like** the information that speaker(c) **would have** if p were the case

Let's make (66) more concrete by examining two explicit scenarios:

(67) a. I believe that if Donald is in Singapore, he is excited. Donald is talking to Kim at the Capella Hotel on Singapore's Sentosa island. Donald is excited.
b. I believe that if Donald is in Singapore, he is excited. Donald is flying to Helsinki to meet Vladimir. I believe Donald is bored. Donald is excited.

In scenario 1 it is natural to assert (65a) or (65b). In scenario 2, in turn, it is natural to assert (65d). The latter case gives rise to conflicting beliefs and (65d) is one way to express a certain reluctance to embrace the proposition for which there is indirect evidence. Accordingly, *seem as if p* is used instead of *seem that p* if what the available evidence suggests is somehow in conflict with what the speaker

Table 12: Modal bases and ordering sources for the two scenarios

	modal base (perceptual/epistemic)	ordering source (doxastic)
Scenario 1	Donald is excited	if Donald is in Singapore, he is excited
Scenario 2	Donald is excited	if Donald is in Singapore, he is excited Donald is bored

(used to) believe. If one looks at the relevant properties of the actual reference world, one can see that they look the same as the properties of the possible worlds where Donald is in Singapore. To put it differently: *As if* introduces the accessibility relation by way of an explicit comparison between two classes of worlds. The accessibility relation simply relates two sets of words. What *jakoby* does after verbs of seeming is compare them, or rather equivalence as to some relevant properties.[20] This corresponds to Bücking (2017: 988)'s counterfactual reading of hypothetical comparative clauses, according to which only those worlds are taken into account that are as similar as possible to the actual world, given of course that the conditional's antecedent is true.

In sum, the contribution of *jakoby* in OP does not seem to be genuinely evidential. Rather, it arises from the meaning of the two elements it is composed of: equative comparison and counter-factual meaning. If this is this case, the following question automatically arises: How did the inferential meaning of *jakoby* change to a reportative one specified in (68)?

(68) $[\![jakoby(p)]\!]^{c,w} = 1$ iff there exists a non-empty reportative informational modal base $f_r(w)$ such that for all $w' \in \cap f_r(w)$, $[[p]]^{w',c} = 1$

Intuitively, *it seems that p* expresses that there is some body of information X which entails that *p* is the case. What kind of information is X? Verbs of seeming are surprisingly flexible and are definitely not limited to expressing inferential evidence:

(69) a. from *perceptual* information X -> infer p (= inferred);
b. from *conceptual* information X -> infer p (= assumed);

[20] I would like to thank Radek Šimík (pc.) for pointing this out to me.

c. from *reportative* -> infer p (-).

The last case is usually not registered as an *inferential* evidential. However, in practice reportative strategies often involve a fair amount of inference from the original utterance to its reported version. de Haan (2007) and Grimm (2010) notice that English *seem* is capable of expressing both direct and indirect evidence. A similar observation has been made by Reis (2007) with respect to German *scheinen* 'seem'. Its Dutch counterpart *schijnen* developed into a marker of reportative evidence and is joined by *lijken* for expressing visual evidence, see Koring (2013). For Cuzco Quechua Faller (2001: 53–55) claims that by using the reportative morpheme *=si*, the speaker does not necessarily deny having inferential evidentials.

Using the idea from Faller (2011) that inferential evidentials involve a non-empty ordering source whereas (informational) reportative evidentials make no reference to an ordering source at all, we can picture the development of *jakoby* as follows:

Table 13: Diachrony of *jakoby* in terms of admissible information types in the modal base

	Modal Base	Ordering Source
early Old Polish	perceptual/conceptual	doxastic
late Old Polish	perceptual/conceptual/reportative	doxastic
Present-day Polish	reportative	-

The semantic shift of *jakoby* involved two main developments. First, the meaning of *jakoby* was broadened to allow for inferences from reportative information (compatible with but not enforced by its *seem*-type embedding verbs). Second, the reportative flavor acquired by *jakoby* licensed its use in complements of speech/report verbs. Since these new contexts were no longer compatible with the original inferential meaning, they ultimately lead to the inability to use *jakoby* in its original contexts.

5 Conclusion

The main aim of this chapter has been to examine the development and the semantic change of the evidential complementizer *jakoby* in the history of Polish

with the main focus on argument clauses. It has been shown that *jakoby* developed a hearsay meaning in the late Old Polish period (1450–1543) and that it ceased to be selected by verbs of seeming in Present-day Polish (1939-present). The semantic shift outlined above corresponds to the evidential hierarchy proposed by de Haan (1999) according to which inferential evidentials can give rise to reportative evidentials.

As for emergence scenarios of complementizers, Willis (2007: 433) argues that the emergence of a new complementizer may involve three scenarios: i) reanalysis of main-clause phrasal elements as complementizer heads, ii) reanalysis of main-clause heads (e.g. verbs, prepositions) as complementizer heads, iii) reanalysis of embedded phrases (e.g. specifiers of CP) as complementizer heads. The development of *jakoby* instantiates a fourth scenario: reanalysis of a complementizer head as another complementizer head.

Finally, the question of where evidentials come from has been addressed in different studies so far, cf. Willett (1988), Lazard (2001), Aikhenvald (2004: 271–302), Aikhenvald (2011), Jalava (2017), Friedman (2018), to name but a few. Various development patterns have been attested cross-linguistically. Aikhenvald (2011) points out two major sources for the development of evidentials. They can either evolve from open classes (e.g. verbs) and from closed classes (e.g. pronouns) or emerge out of an evidential strategy as an inherent marker of the grammatical category of evidentiality. The case of *jakoby* illustrates the former scenario, in which a complementizer develops into another complementizer. However, not much attention has been paid to the pattern described in this chapter and fine-grained analyses depicting individual micro-steps of how evidential expressions come into being and develop still require further research.

Primary sources

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EZ	*Ewangeliarz Zamoyskich* ['The Zamoyskich' Gospel'], 2nd h. 15th c.
FP	Sebastian Koperski (2015): *Fałszywy prorok* ['The Deceitful Prophet']. Poznań: Zysk i S-ka Wydawnictwo.
KG	*Kazania Gnieźnieńskie* ['The Sermons of Gniezno'], 1st h. 15th c.
KorBa	*Elektroniczny korpus tekstów polskich z XVII i XVII w. (do 1772 r.)* ['Electronic corpus of 17th and 18th century Polish texts (up to 1772)' also known as 'The Baroque Corpus of Polish'].
NewCor	Korpus tekstów z lat 1830–1918 ['Corpus of 1830–1918 Polish'].
NKJP	*Narodowy Korpus Języka Polskiego* ['National Corpus of Polish'].
PolDi	A Polish Diachronic Online Corpus.

Abbreviations

1/2/3	1st/2nd/3rd person		(inflected for number and gender)
ACC	accusative	M	masculine
ADD	additive	N	neuter
AN	animate	NEG	negation
AOR	aorist	N-VIR	non-virile
COMP	complementizer	PL	plural
DAT	dative	PRED	predicative
F	feminine	PROG	progressive
GEN	genitive	PST	past tense
HAB	habitual	REFL	reflexive
ILLA	illative	REP	reportative
IMPR	impressive	SG	singular
INCL	inclusive	SUBJ	subjunctive mood
INF	infinitive	TOP	topic
loc	locative	VIR	virile
L-PTCP	*l*-participle		

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Chapter 5

Semantic and syntactic change of *equis* in Mexican Spanish

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In this paper, we investigate the synchrony and diachrony of the linguistic item *equis* in Mexican Spanish. Its original use is the letter x which stands for some variable x. One function that appeared very recently is the discourse function according to which *equis* is used to refer to some utterance from the discourse which denotes a proposition and the speaker expresses his indifference whether this proposition is true or not, e.g. A: *Es verdad.* 'It's true.' B: *Equis!* 'I don't care (whether it is true or not)'.

We analyze the diachronic change of *equis* from a variable use x into a discourse adverb as a shift of Indifference over identities of entities into Indifference over answers to questions under discussion. This semantic shift is syntactically expressed as a shift from nominal modifier into sentence modifier. We will argue that Indifference is pragmatically derived in the case of variable use and is lexically encoded in the discourse use.

1 Introduction

In Mexican Spanish (Mex), the expression *equis* stands for the character *x* as in (1) which can be interpreted semantically as some variable 'x' if it is used as a nominal modifier as in (2) (henceforth, the variable use of *equis*):

(1) Equis o jota
'x or j'

(2) Context: At some congress, the scientists discuss the possibility of a planet on which life exists:

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Imaginemos un planeta *equis* donde viven otros seres humanos.
let-us-imagine a planet EQUIS on-which live other beings humans
'Let us imagine some planet x with human beings on it.'

Equis can also be used as a determiner (see also Diccionario del Español de México (DEM). In (3), *equis* expresses that the speaker should be informed no matter what the reason for the addressee's absence might be. In this context, *equis* can be replaced by a Free Choice (FC) indefinite *cualquier* 'any' (see Alonso-Ovalle & Menéndez-Benito 2011 on *cualquier* in European Spanish):

(3) Si por *equis*/cualquier cosa no puedes venir mañana, házmelo saber.
if for EQUIS/any thing not can come tomorrow let-me-it know
'If for whatever reason you cannot come tomorrow, let me know.' (Mex)

Besides the determiner use of *equis*, it can also have a predicative function with an Evaluative Interpretation of 'unremarkable, unimportant' in Mexican Spanish:

(4) Así que es difícil identificar algo serio de algo
so that is difficult indentifying something serious from something
equis.
EQUIS
'It's difficult to distinguish something serious from something unimportant.'

It can also be used as a sentence or discourse adverb signaling speaker's indifference with respect to the truth or falsehood of some proposition mentioned earlier in the discourse. The speaker B who utters *equis* in (5) does not consider it important that her name is Nora:

(5) A: No es Dora, Es Nora.
not is Dora is Nora.
'A: It's not Dora, it's Nora.'
B: *Equis*!
EQUIS
'B: I don't care!'

As will be shown in the section on diachrony of *equis*, these different uses did not arise simultaneously. The discourse adverb use appeared very late. The variable use appeared earlier than the discourse adverb use and it is restricted to

written texts, whereas all other uses (determiner, predicative, discourse adverb use) are common in oral texts:

The main aim of this paper is to analyze the diachronic change of the linguistic item *equis* and to investigate the possibility of analyzing all uses of *equis*, or at least some of them, in a uniform way. This study will shed some light on the relation between synchrony and diachrony and it will provide one possible answer to the question of how different synchronous meanings of one lexical item may develop diachronically.

This paper is organized as follows. We will first analyze the distribution of *equis* and its functions on the basis of corpus data in synchrony (see Section 2). We will then suggest how to analyze different uses of *equis* in a more uniform way in Section 3 and suggest a path about the diachronic development of different functions in Section 4. The suggested diachronic development will be then tested by diachronic data in Section 5. The summary and outlook will be presented in Section 6.

2 Syntactic and semantic functions of *equis* in modern Mexican Spanish

In this section, we will shortly describe different syntactic and semantic functions of *equis* in Mexican Spanish according to the corpus data, and go into detail in subsequent sections.

The synchronic data was taken from Corpus del Español (CDE) Web/Dialects: Mark, Davies. Corpus del Español. [http://www.corpusdelespanol.org/], November 2017. We have extracted 468 occ. of *equis* from the synchronic corpus and classified them according to syntactic distribution and semantic/pragmatic function.

The relative frequency per Million shows that the number of occurrences of *equis* is higher in Mexican Sp. (468 occ. per 260598272 occ. in total) than in other varieties of Latin American and European Spanish (for instance in Argentinian Spanish 218 occ. per 182704898 or in Europ. Sp. 418 occ. per 459312821):[1]

(6) Mex.Sp. 468: 260598272 = **1.8** per Million
Eu.Sp. 418: 459312821 = 0.9 per Million
Arg.Sp. 218: 182704898 = 1.2 per Million

[1]It is impossible to use inferential statistics to compare the numbers in (6) because these numbers represent numbers of populations and not means of different groups.

The higher frequency of *equis* in Mex.Sp. suggests that *equis* is used in more numerous contexts in Mexican Spanish than in other varieties of Spanish.[2] This suggestion is confirmed by our questionnaires according to which *equis* is used in much more contexts in Mexican Spanish than European Spanish, e.g. the discourse adverb use in (7) or the predicative use in (8)):

(7) A: Oye, ¿y si ya no te llama?
hey and if now not you call
'A: Ey, what if (s)he doesn't call you?'
B: ¡Ay, *equis*!
oh-my EQUIS
'B: Oh my, whatever!/ forget about it!'
(8 Mex. speakers use *equis* as discourse adverb, 5 Mex. speakers do not use it but find the sentence grammatical, all 13 Europ. Spanish speakers do not find the sentence grammatical)

(8) Es algo *equis*.
is something EQUIS
'It is something unimportant.' (used by Mex. speakers, not used by European Spanish speakers)

As we can see from the description of *equis* in Table 1, which does not include the function of *equis* as a proper noun (e.g. *Signor Equis, rayos equis* 'Mr. x, x rays')[3], *equis* is mostly used as a nominal modifier (among 128 occ. of nominal modifier *equis*, 105 occ. represent prenominal modifier or determiner use and 23 occ. postnominal modifier use). The second most frequent function is the discourse adverb function (49 occ.), followed by the predicative use of *equis* with copula(like) verbs (9 occ.).

In most cases, *equis* appears in sentences with verbs in present tense. The most frequent interpretation of *equis* is the expression of speaker's Ignorance (Ignor.) and/or Indifference (Indif.) 'I don't care about x':

We discuss the details of every syntactic and semantic function in the following subsections.

[2] Actually, a higher frequency in use of *equis* in Mexican Spanish does not entail necessarily that *equis* is used in more different contexts there. This is why we tested speaker's judgements as well.

[3] We eliminated all occ. with *equis* as a proper noun (209 occ.).

Table 1: *Equis* in Mexican Spanish in CDE web/dialects

Syntactic Function				
Nominal modifier/ Determiner (128 in total)		Predicate (e.g. *Es equis*)	Discourse Adverb	
Equis N	N Equis			
105	**23**	**9**	**49**	
Total 181				
Tense and Mood				
Present tense	Past tense	Subj./ Condit.	Modal Verb	Imperative
64	**37**	**14**	**16**	**1**
Total 132				
Interpretation				
Ignor./Indif.	Eval. 'unimp.'	"Various"	"Certain"	
111	**24**	**9**	**38**	
Total 181				

2.1 *Equis* as prenominal modifier or determiner

The prenominal modifier or determiner *equis* has the function of an existential quantifier 'some' when used with respect to the number or quantity of the noun it modifies (e.g. *equis pesos* 'some cents', *equis número de coches* 'some number of cars', *equis cantidad* 'some quantity', *equis años* 'some years'. There are no occurrences with the prenominal *equis* preceded by an article (e.g. *un,a* 'a'). This observation suggests that *equis* acts as a determiner in the prenominal position.

As we will see in the following discussion, tense and modality matter for the interpretation of *equis*. If *equis* appears in Free Choice (FC) contexts (e.g. generic sentences, conditional antecedent, comparatives, etc. see Aloni et al. 2010 for FC

contexts), it has FC interpretation (i.e. every alternative is a possible option):[4]

(9) Si para tu abuelo es importante que lo acompañes *a equis*
if for your grandfather is important that him accompany to EQUIS
lado, acompáñalo a *equis* lado.
place accompany-him to EQUIS place
'If it is important for your grandfather to go with him anywhere, go with him anywhere.'

(10) de modas o creación de una necesidad innecesaria - en el caso de
of trends or creation of a necessity innecesary in the case of
verse *como equis tv-star*, porque se pierde la verdadera
seeing-oneself as EQUIS tv-star because it loses the true
identidad del o personal.
identity of-the self personal
'Regarding trends or creating unnecesary needs – in the case of seeing oneself as any TV-star, because you loose the true identity of your personal self.'

In episodic sentences, the determiner *equis* refers to some specific individual (e.g. some artist) with an ignorance or indifference inference, i.e. the speaker signals that he/she does not remember or know the name of the artist or does not find it important to mention it:

(11) Pero la última vez que estuve allá, fue en un concierto de *equis*
but the last time that was there was in a concert of EQUIS
artista donde estábamos yo y cuatro personas más. Era patético.
artist where were me and four people more was pathetic
'But the last time I was there, it was at a concert of some artist where it was me and four people more. It was pathetic.'

In sentences with negation as in (12), *equis* either refers to some reason with ignorance inference as in (11) or it has a universal interpretation as in (13) where the addressee is asked to inform the speaker for every reason there is that prevents the addressee from coming:

[4] In order to be sure that *equis* has FC interpretation in FC contexts, we asked native speakers of Mexican Spanish if they could also use *cualquier* instead of *equis* in these contexts (for FC interpretation of cualquier, see Alonso-Ovalle & Menéndez-Benito 2011, among others).

(12) pero en definitiva es una opción para las familias que por *equis motivos*
but in end is an option for the families that for EQUIS reason
no tienen oportunidad de salir de vacaciones.
not have oportunity of going-out of holidays
'But, in the end, it is an option for families that, for some reason, don't have the opportunity to go on holiday'

(13) Si por *equis razón* no vas a venir, avisame.
if for EQUIS reason not go to come inform-me
'For whatever reason you cannot come, inform me.'

The determiner *equis* is much more flexible with interpretations than usual FCIs such as Sp. *cualquier* 'any'. It can have the meaning of 'much/a lot' which seems to be context dependent, especially in contexts that trigger the interpretation of long duration, e.g. *equis tiempo* 'long time' (see Rivero 2011 for a similar observation on *cualquier cuantidad* 'any quantity' or 'a lot of quantity'):

(14) Sí, soy divorciado. - Sí, hace *equis* tiempo.
yes am divorced yes ago EQUIS time
'Yes, I'm divorced. - Yes, a long time ago.'

It can also mean 'several' or 'many' when it appears with plural NPs:

(15) Antes uno para una promoción esperaba *equis años.*
before one for a promotion waited EQUIS years
'In the past, you had to wait many years to be promoted.'

(16) o como si fuera una estación de subte que tiene *equis estaciones* y
or like if was a station of subway that has EQUIS stations and
cada estación se ocupa de sus usuarios
each station it attends of its users
'Or as if it were a subway station that has several stations and each one attends its users.'

The meaning 'much/many/several' has also ignorance or indifference interpretation, i.e. the speaker does not know the identity or the exact number of the variable x or the speaker does not find it important to mention the identity or the number of the variable x. To summarize this section about prenominal or determiner *equis*, it acts as an indefinite 'some' and depending on the modal or

episodic context it can either have FC interpretation or be interpreted as specific indefinite with an ignorance/indifference interpretation. *Equis* can have the meaning of 'several' or 'many' if it modifies plural nouns.

2.2 Adjectival or predicative use of *equis*

Our corpus contains examples with *equis* appearing after copula(-like) verbs (*ser/ estar* 'be-stative', *volver* 'become') with the meaning 'neither good nor bad/ unremarkable' in (17) or 'unimportant' in (18):

(17) A: ¡Hola! ¿Qué tal estuvo la película que fuiste a ver ayer?
hello how so was the film that went to see yesterday
'Hey! How was the movie yesterday?'
B: Estuvo *equis*, me esperaba algo mejor.
was EQUIS I expected something better
'The movie was unremarkable. I expected something better.'

(18) Ese chavo me es *equis*
this guy me is EQUIS
'That guy is not important to me./I don't care about this guy.'

The predicative *equis* can be modified by degree adverbs *muy, tan, bien, bastante, completamente* 'very/completely' usually denoting high degrees:

(19) Cuando conocí a René me pareció *muy equis*, o sea, como
when met with René to-me seemed very EQUIS that is like
insignificante, un nerd.
insignificant a nerd
'When I got to know René, he appeared very unremarkable/normal to me, or insignificant, a nerd.'

(20) La comida no es mala pero es *muy equis*.
the food not is bad but is very EQUIS
'The food is not bad but very ordinary.'

When *equis* is used under negation, the negation expresses that it is not the case that some individual holds an unremarkable or bad property, but rather a good or distinguished property.

(21) *No está equis*. Es una galería linda.
not is EQUIS is a gallery beautiful
'It[=the gallery] is not bad/ordinary. It is a beautiful gallery.'

2.3 Postnominal *equis*

The postnominal *equis* is less frequent than the prenominal one (four times less). All occ. found in the corpus CDE Web/Dialects with postnominal *equis* are restricted to indefinite or bare nouns (e.g. *motivos equis* 'reasons x', *una mujer equis* 'a woman x').

When postnominal *equis* appears after copula(-like) verbs, it is interpreted as a gradable adjective with the meaning 'ordinary, unimportant' and can be modified by degree adverbs like *muy, bastante*, 'very' (see also the adjectival use of *equis* in Section 2.2):

(22) es una mujer (muy) *equis*, sorry pero sí lo es.
is a woman (very) EQUIS sorry but yes it is
'She is a (very) ordinary woman. I'm sorry but she is.'

(23) Una fiesta (bastante) *equis*.
a party (very) EQUIS
'a (very) unremarkable party'

When postnominal *equis* occurs in modal contexts (e.g. with modal verbs), it usually has the interpretation of an FCI 'any' (see also prenominal *equis* in Section 2.1):

(24) Así, en un momento dado, un país *equis* puede estar generando
so in a momento given a country EQUIS can be generating
ahorro, pero este puede filtrarse hacia el exterior;
savings but this can leak towards the exterior
'In that way, at one point, any country may save money, but it can be leaked outwards.'

If postnominal *equis* appears in episodic contexts that refer to past events, postnominal *equis* can have the interpretation of a variable x as in (25) and (26). In (25), the speaker does not specify the exact reasons for why she stopped drinking and the hearer infers that these reasons are unimportant to be mentioned for the main argument of the discussion, namely that she lost weight. Note that

in this context degree modification of *equis* as with adjectival use of *equis* (see Section 2.2) would not make much sense because the argument of the discussion is not about the speaker´s evaluation of the reasons but about losing weight:

(25) Estuve tomando por espacio de dos meses, deje de tomar por
was drinking for space of two months quit of drinking for
motivos *equis* y de un tiempo a esta parte fui a la balanza y
reasons EQUIS and from some time to this side was to a scale and
hoy estoy pesando 120 kilos.
today am weighing 120 kilos
'I was drinking for two months, I quit for reasons x and, for some time, I weighed myself on the scales and now I weigh 120 kilos.'

In the following context, the hearer infers from the use of the variable x associated with *equis* that the speaker is ignorant or indifferent about the deasease with which every child was born. As in (25), degree modification does not make sense here either:

(26) Uno se entera de cada caso de niños que nacieron con una
one it learns of each case of children that were-born with a
enfermad *equis*, a destiempo, de bajo peso, que se tienen que
disease EQUIS a wrong-time of little weigh that them have to
quedar en incubadora
stay in incubator
'One learns about every case of children who are born with a disease x, at the wrong time, with little weigh, and they have to remain in the incubator'

The variable use is always replacable by the character x or some other character (e.g. *una enfermedad x o z* 'a disease x or z').

We can sum up that *equis N* and *un,a N equis* can have a similar meaning of 'some' or 'any' despite their different syntactic status. We assume that this is due to the possibility of interpreting *equis* in *un,a N equis* as some variable which naturally gets the meaning 'some' in episodic contexts or 'any' in modal contexts. Under copula(-like) verbs postnominal *equis* is always interpreted as a degree predicate with the meaning 'unremarkable, unimportant' which can be degree modified. In this case, the postnominal *equis* cannot be replaced by the character x

(27) * es una fiesta muy x (o z)
is a party very x (or z)

We can thus conclude that postnominal *equis* can have an adjectival function with an evaluative interpretation of 'unremarkable, unimportant' under copula(-like) verbs in predicative position or it can have the variable use x and additionally express speaker's Indifference or Ignorance about the value of x.

2.4 Discourse adverb use

The discourse adverb *equis* is different from all other functions of *equis* we have seen so far since it must not appear inside a clause and be adjacent to some category it modifies:

(28) A: No es Dora, es Nora, teto
B: Equis
A: Pues
'A: It's not Dora, it is Nora, looser. - B: I don't care! - A: Well…'

(29) Sí son homosexuales, *equis*. O heterosexuales, *equis*, el punto es
if are homosexuals EQUIS or heterosexuals EQUIS the key is
respetarse a sí mismo.
respecting to one self
'If they are homosexual, I don't care, or heterosexual, I don't care, the most important is to respect oneself.'

As a discourse adverb, it can have several functions, one of which is to signal that the speaker does not care about which alternative proposition is true. In (28) the speaker signals that he does not care whether the name of some girl is Dora or Nora. In (29), *equis* appears right adjacent to the yes-no question and the speaker expresses his indifference as to which answer is true, i.e. the speaker is indifferent about whether they are homosexuals or not, it does not matter as long as everyone respects each other. We can thus summarize that the discourse adverb *equis* expresses speaker's indifference wrt. the truth of alternative propositions.

In our corpus, we did not find any discourse adverb *equis* with degree modification in contrast to the predicative/adjectival use of *equis* in (Section 2.2 and Section 2.3):

(30) A: Some utterance x
B: Muy equis. (0 occ. in CDE)
'I don't care (a lot) about utterance x.'

Moreover, the discourse adverb *equis* cannot be negated in contrast to the predicate *equis* (see e.g. (31)):

(31) A: You don't seem to care about x.
B: No equis. (0 occ. in CDE)
'It's not true that I don't care about x.= I do care about x'

The discourse adverb *equis* can also appear as a reaction to a question being addressed by the interlocutors in a given discourse where the speaker signals that he is not interested in the right answer to the question being discussed, i.e. he is indifferent towards any answer to the current question under discussion (QUD) (see Roberts 1996 for QUDs):

(32) Porque siento que alguien más lo ha dicho mejor que yo, pero
because feel that someone more it has said better than me but
equis, si me pides mi opinión, yo diría que…
EQUIS if me ask my opinión I would-say that
'Because I think somebody said it better than me, but I don't care. If you ask my opinion, I would say that…'

(33) ¿Cómo estás? Igual, *equis*. Bien. ¿Cómo están tus jefes?
how are same EQUIS good how are your bosses
'How are you? The same, but it's not important. Good. How are your parents?'

Besides expressing the indifference towards some (hidden) alternatives, it can have a discourse function signaling a topic change in the discussion. Usually this function is expressed by *pero equis, ay equis, bueno, equis* 'But, well, anyway/whatever':

(34) ¡Hola! Hoy es el primer día de clases así que estoy emocionada
hello today is the first day of classes so that am excited
traumada pero *equis*, todo va bien por el momento (luego nos
shocked but EQUIS all goes well for the moment later us
aplastarán como cucarachas).
smash like cockroaches
'Hello! This is the first day of classes so I am very exited but anyway, everything is going well for the time being (then they will smash us like cockroaches)'

(35) está bien fea tu ciudad alcranienta... bueno *equis* disculpa que
is very ugly your city alcranienta well EQUIS sorry that
sea grosero pero pues asi somos los chilangos de categoria
be.SUBJ rude but well so are the chilangos of high-rank
'It is so ugly your "alcranienta" city. Anyway, sorry for being so rude but we Mexicans are like that'

We can thus summarize that *equis* as discourse adverb expresses speaker's towards the right answer to the current question under discussion (QUD) or towards whatever has been said so far.

2.5 Summary of the data and further outlook

According to our analysis of the synchronic data, *equis* as a determiner has the meaning 'some, certain, various' and as a postnominal modifier *equis* has a variable use x which is interpreted as 'some' with ignorance/indifference inference in episodic contexts (e.g. *motivos x* 'some reasons' and I don't know/care which ones). In modal contexts, the variable is interpreted as a Free Choice 'any'. In predicative position after copula(-like) verbs *equis* has an adjectival use with the possibility of degree modification (e.g. *muy equis* 'very unremarkable/ bad/ unimportant'). As discourse adverb, *equis* expresses speaker's indifference with respect to a proposition which corresponds to an answer to some QUD:

As we can see, the Indifference inference appears almost everywhere. It is somewhat parasitic on the indefinite and variable use of *equis*. It is lexicalized as a degree predicate 'unimportant' under copula(-like) verbs and it is expressed by the meaning 'I don't care' of the discourse adverb. Our main working hypothesis is thus that the Indifference inference is the core property of (almost) every use of synchronic *equis*. We will suggest a unified analysis of *equis* based on the Indifference Inference and explain the variation between different uses synchronically (Section 3) and diachronically (Section 4).

3 Synchronic analysis of *equis*

In Section 2, we have seen that the notion of Indifference is the common interpretation associated with many uses of *equis*. We will first introduce into the notion of Indifference after von Fintel (2000) in Section 3.1. We will then apply this notion to the variable use of *equis* in Section 3.2 and analyse the discourse adverb *equis* in Section 3.3 and postnominal *equis* in Section 3.4.

Table 2: Summary of contexts, syntactic categories, semantic/pragmatic functions

		Syntactic category			
Syntactic contexts	Interpretations/ Functions	Determiner	Post-nominal	Sentential adverb	Predicate
	Variable use (x or z) + Ignorance or Indifference	–	+	–	–
Episodic contexts {perfective past}	Existential quantifier 'some' + Ignorance or Indifference with plural NP 'some, many, various'	+	–		–
Modal contexts {if-clauses, generic sentences}	Free Choice 'any'	+	+	–	–
Predicative contexts {copula clauses}	Degree predicate 'unimportant, unremarkable'	–	+	–	+
Not embedded in a sentence	'I don't care'	–	–	+	–

3.1 von Fintel's Indifference

In order to give an account of the indifference inference of the variable use of *equis* in Mexican Spanish, we will look at what has been suggested in the literature with respect to indifference inference. One prominent analysis was proposed by (von Fintel 2000) for the English indefinite *wh-ever* (see also Condoravdi 2005). The indifference inference in the following example is expressed as a presupposition according to which the agent Ed could have blurted out anything else:

(36) In response, Ed blurted out whatever came to his mind first.
Assertion: In response, Ed blurted out the first thing that came to his mind.
Presupposition: Ed could well have blurted out anything else that came to

his mind first.

Under von Fintel's (2000) analysis in (37), the presuppositional content of *whatever* makes reference to a contextually determined modal base F, a mapping from worlds to sets of worlds (see (37)). F(w) is the set of worlds in which the speaker' s beliefs about w hold. Sim expresses similarity between worlds and maps a world w and a proposition p to a set of worlds maximally similar to w in which p is true. The presupposition triggered by *whatever came to his mind first* conveys that if the thing that came to his mind first had been different in all the counterfactual worlds, the truth of the proposition "Ed blurted out the thing that came to his mind first" would also hold in the counterfactual worlds.

(37) Indifference Analysis (von Fintel 2000)
whatever(w)(F)(P)(Q)

a. presupposes:
(∀w' ∈ Sim (w, F(w)) ∩ (λ w". ίx. P (x,w") ≠ ίx. P (x,w)) Q(w')(ίx. P (x,w')) = Q(w)(ίx. P (x,w))

b. asserts:
Q(w)(ίx. P (x,w))

On von Fintel's analysis, whatever-statements presuppose that the speaker cannot identify the referent of the free relative and assert that the referent - whatever it is - has the matrix property in all of the speaker's alternatives. According to von Fintel (2000), Ignorance and Indifference inferences are the result of different modal bases: in case every alternative is a possible alternative according to speaker's knowledge, the ignorance inference is triggered. In case every alternative is a possible alternative according to speaker's preferences, the indifference inference is triggered.

Whether a wh-*ever* free relative has an external indifference or agent indifference interpretation depends on contextual factors, and is only an "epiphenomenal inference" that is drawn from the presupposition of variation, i.e. from the presupposition that every alternative is a possible option (Tredinnick 2005: 108). On Tredinnick's analysis whenever there is no overt expression of an agent, the indifference is speaker related (e.g. I blurted out whatever came to my mind first.). This is indeed what has been observed in the literature on Spanish FCI *cualquiera*. If *cualquiera* is embedded under volitional verbs that express some volitional agent, we get agent indifference with respect to the choice of some alternative (see Choi & Romero 2008, Alonso-Ovalle & Menéndez-Benito 2011). In the following example, agent's indifference refers to the choice of the book:

(38) Juan necesitaba un pisapapeles, de modo que cogió un libro
Juan needed a paperweight of way that he-took a book
cualquiera.
CUALQUIERA
'Juan needed a paperweight, so he took a random book.'

We suggest to derive Indifference of the variable use of *equis* from von Fintel's counterfactual inference (see variable use of *equis* in 3.2).

3.2 Variable use of *equis*

Let us assume the following syntax of the variable use of *equis* represented as x in order to distinguish it from other uses such as the discourse adverb use. We assume that the postnominal x is represented as a reduced relative clause similar to postnominal adjectives in Romance and other languages (see Cinque 2010 and others):

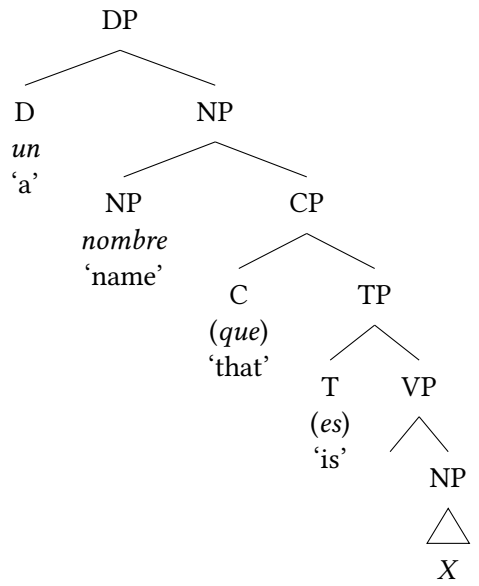

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Figure 1: Syntax of the variable *equis*

The semantic relation between the two NPs is defined as follows: the DP as represented in Figure 1 denotes a property that is existentially quantified. Addi-

tionally, the variable x adds the information that x is a specific name, say Dora or Nora (see (39)b.). We represent the requirement that x is a specific name as a set of domain alternatives which is exhaustified, i.e. only one alternative can hold (see (39)c.):

(39) The denotation of *un nombre x*:
   a. $[\![\textit{un nombre x}]\!] = \lambda P\ \exists x \in D\ [\text{name}(x) \wedge P(x)]$
   in words: 'some name'
   b. Domain Alternatives(DA) = $\{\lambda P\ \exists x \in D'\ [\text{name}(x) \wedge P(x)] \mid D' \subseteq D\}$
   in words : {Dora, Nora} where Dora, Nora are alternatives of 'some name'
   c. Exhaustification of domain alternatives=x is either Dora or Nora.

If we apply the denotation in (39) to the rest of the whole sentence in (40)a., we get an assertion in (40)b. which contains a specific indefinite and a set of alternative propositions in (40)c. which contain domain alternatives applied to the rest of the clause. The exhaustification in (40)d. expresses that only one alternative proposition is true in the world of evaluation:

(40) a. Tiene un nombre *equis* 'She has a name x'
   b. Assertion: $\exists x$ [x is a name and she/he has some name(x)]
   c. Alt = {her name is Dora, her name is Nora}
   d. Exhaust(Alt) = {[λw: Her name is Nora and not Dora in w] ; [λw: Her name is Dora and not Nora in w]}

We assume that (40)a. expresses speaker's indifference wrt the value of the variable x which follows from the counterfactual inference in (41), namely that if her name had been different in all the counterfactual worlds, the truth of the proposition that she has some name would still hold in the counterfactual worlds:

(41) Counterfactual inference associated with the variable x:
   $(\forall w' \in \text{Sim}(w, F(w)) \cap (\lambda w''.\ x\text{: name}(x,w'') \neq x\text{: name}(x,w))$
   $\exists x.\text{name}(x,w') \ \&\ \text{be}(\text{her}, x, w') = \exists x.\text{name}(x,w) \ \&\ \text{be}(\text{her}, x, w)$
   'No matter what her actual name is, all names are equal.'

The question is where the counterfactual inference in (41) comes from. Is it lexically encoded in the variable use or does it follow from some pragmatic principle? We assume that it is a pragmatic inference that goes informally as follows: the hearer concludes from (40)a. that it does not matter to the speaker which of

the alternatives triggered by x holds in the actual world because if the speaker knew the name of the person he would have said so due to Gricean Conversation Maximes (roughly: be informative, say true things, be relevant) (see Aloni 2005 for formal analysis of Gricean implicatures). The indifference inference derived from the variable use of *equis* has a similar pragmatic status as disjunctions or plain indefinites (see Aloni 2005 for the Indifference Inference associated with these items):

(42) Do you want coffee or tea?
Pragmatic Inference: the speaker does not have any preference as to whether I, hearer, should take coffee or tea).

(43) Paul married some girl from Nebraska.
Pragmatic Inference: Hearer assumes that the speaker is ignorant about the identity of the girl or he does not consider it important to mention her name.

We assume that the Indifference Inference associated with the variable use x is not lexically encoded in the lexical entry of x itself but is derived as a pragmatic inference according to which every value for the variable x is a possible candidate for the truth of the proposition.

3.3 Degree predicate analysis of *equis*

In the following example the postnominal *equis* is neither interpreted as a variable nor as a discourse adverb *equis* but as a predicative adjective with the meaning 'unimportant' as it is contrasted to the meaning 'serious':

(44) Así que es difícil identificar algo serio de algo
so that is difficult indentifying something serious from something
equis.
EQUIS
'It's difficult to distinguish something serious from something unimportant'

The predicative *equis* can be degree modified:

(45) Estuvo bien *equis*
was very EQUIS
'It was very ordinary/unimportant'.

The degree analysis for *equis* as 'unimportant' is represented as follows. The predicate *equis* takes a degree argument d, an individual x and an attitude holder s (usually the speaker) and states that x is unimportant or ordinary to degree d to s:

(46) [Adv/Adj *equis*] = λdλx. *ordinary/unimportant to s to degree* (d)(x)

The degree predicate can be modified by degree adverbials such as *muy/ tan/ bien* that denote high degrees:

(47) [DeP Deg° *muy/tan/bien* 'very' [Adv/Adj equis]] = λx. very *ordinary/unimportant*' (x)

We assume that *algo equis* in (44) is represented as a Small Clause (PrP) that denotes a proposition that something is ordinary/unimportant to some degree d to some attitude holder s:

(48) [PrP algo equis] = λd ∃x. ordinary/unimportant to s to degree (d) (x)

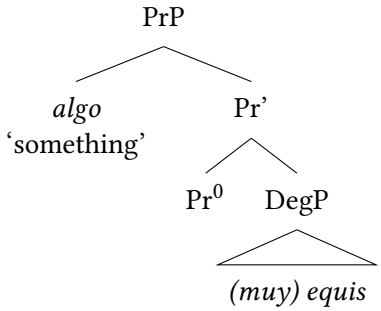

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Figure 2: Syntax of the degree predicate *equis*

The syntax of the adjectival use of *equis* and the variable x (see Figure 1) are almost identical. They both represent predicative elements. However, they are semantically different. In the degree predicate use, the term *equis* is interpreted as a degree predicate. In the variable use, *equis* is a predicate that is identical with a specific element of the set denoted by the noun.

3.4 Discourse use of *equis*

In order to represent the syntactic structure of the discourse adverb *equis* in (49), we assume that *equis* adjoins to the sentence that serves as an answer to the question under discussion (QUD) in (50) (i.e. *what is her name?*):

(49) A: No es Dora, Es Nora. 'It's not Dora, it's Nora.' B: *Equis*! 'I don't' care!'

(50) *Equis* [It is $\text{Nora}_{\text{Focus}}$] 'I don't care whether it's Nora or not.'

Equis acts as a sentential adverb that selects a sentence with a focus feature. The focus feature generates alternatives (i.e. her name is Nora or some other name):

(51) Alt(S) = {[λw: Her name is Nora in w]; [λw: Her name is Dora in w]}

The function of *equis* is to express indifference with respect to these alternatives, i.e. the speaker is indifferent as to which alternative is the right answer to the current QUD (i.e. *what is her name*).

The discourse adverb *equis* has the following denotation. It takes a context variable (c), a world-time variable (i), a set of alternative propositions that represent some QUD, a speaker (s) and an addressee (a). The discourse adverb expresses speaker's indifference at some context c and world-time (i) to the addressee (a) about every proposition of QUD:

(52) ⟦Discourse Adverb Equis⟧ (c)(i) ($\text{QUD}_{<<st>t>}$) (s)(a) =
at time-world index i and in a context c, the speaker s expresses his indifference to the addressee a about $\forall q_{<st>} \in \text{QUD}_{<<st>t>}$

If we apply the denotation in (52) to the sentence in (49), we get the following denotation which expresses speaker's indifference wrt alternative proposition represented in (51):

(53) ⟦Discourse Adverb Equis in (49)⟧ (c)(i) (QUD) (s)(a) =
at time-world index i and in a context c, the speaker s expresses his indifference to the addressee a about every proposition in {her name is Dora, her name is Nora}

Let us see how this analysis applies to an example where *equis* is used with yes-no questions:

(54) Oye, ¿y si ya no te llama? – ¡Ay, *equis*!
'What if he doesn't call you? – Oh my, I don't care!'

Here we assume that *equis* scopes over the if-clause which generates two alternative propositions p; ¬p:

(55) *Equis* [si [me llama]]
EQUIS if me calls
'I don't care whether he will call me (or not).'

The following figure shows that the sentence adverb *equis* adjoins to the whole CP representing the clause *si me llama*. We assume that the whole clause is a DiscourseP because the CP *si me llama* refers to some previous utterance in the discourse:

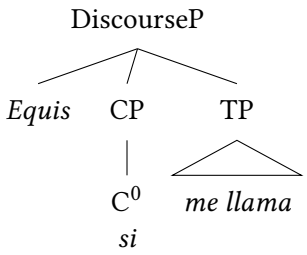

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Figure 3: *Equis* in si-sentences

The focus sensitive operator *if* generates the two alternatives he either will call me or he won't and *equis* operates on these alternatives in that it expresses indifference whether p or ¬p is true:

(56) Alt(S) = {[λw: he will call me in w]; [λw: ¬ he will call me in w]}

The denotation of *equis* expresses indifference with respect to these alternatives: i.e. he will call me or he won't call me. We skip other uses of *equis* where the QUD is not overtly expressed and the alternatives have to be recovered from the discourse or the common ground as in the following example:

(57) bueno otro dia sigo con el tercer paso. Ay ya *equis*, que pase
well another day keep with the third step oh now EQUIS that passes

lo que tenga que pasar
that which has to pass
'Well, I'll continue next day with the third step. Anyway, come what may'

However, we think that our analysis can be extended to these uses as well as long as it is possible to recover some QUD that triggers alternatives and the speaker signals his indifference with respect to these alternatives. A detailed analysis of such cases awaits future research. Now that we have analyzed different uses of *equis* in synchrony, the question arises how they are diachronically related.

4 The diachronic change

4.1 From variable x into degree predicate *equis*

We assume that the pragmatic implicature of the indifference reading of the variable use x has been lexicalized into the meaning of the evaluative predicate *equis* 'unimportant'. Let us see the variable interpretation again:

(58) Sea un día x (o z)
be-SUBJ-it a day EQUIS (or z)
'Be it a day x (or z)'
Assertion: $\Diamond \exists x \in D$ [day(x) $\wedge$ be (it, x)] 'It can be some day'
Alternatives = It can be day a $\vee$ It can be day b $\vee$ It can be day c

The pragmatic Implicature that the hearer derives via conversational Maximes is that the speaker is ignorant or indifferent about the identity of the day x. Thus the variable is not instantiated by some specific day (say Monday):

(59) Pragmatic Inference in (58): For every x and x is a day, the identity of (x) is not important to the speaker

We assume that the change from the variable use into predicate use is triggered by the lexicalization of the Pragmatic Inference:

(60) Lexicalization of the Pragmatic Inference:
$equis_{<e,t>}$ = 'unimportant to the speaker'

In the next step, the lexicalized predicate *equis* turns into degree predicate:

(61) $equis_{<e,d>}$ = 'unimportant to the speaker to degree d'

The next step represents a shift from speaker's indifference to indifference of any other attitude holder (e.g. addressee's indifference in (63) or 3rd person's indifference in (64)):

(62) equis = 'unimportant to degree d to some attitude holder'

(63) Te pareció *equis*? 'You found it ordinary?'

(64) Le da *equis*. 'She does not care.'

The diachronic change of the variable use into degree predicate is thus the result of lexicalization of the pragmatic inference and the shift of speaker's indifference to indifference of any other attitude holder.

4.2 From Predicate *equis* into Discourse Adverb *equis*

The diachronic change of *equis* into a discourse adverb is not a very big step. It is just a shift in scope of Indifference, i.e. from Indifference over identities to Indifference over propositions:

(65) **Semantic change** of the scope of Indifference Inference

- All **entities** are possible options according to speaker's preferences (diachronic step 1)
- All **answers** are possible options according to speaker's preferences (diachronic step 2)

This shift in scope of Indifference has been lexicalized into a new use of *equis*, namely sentence adverb with a different feature makeup, i.e. *equis* selecting a CP (Section 3.3). We represent the diachronic change of *equis* schematically as follows. The first diachronic step shows that *equis* has been used as a nominal modifier which has been reanalyzed as a sentence modifier in the second diachronic step:

(66) **Syntactic change**

- *Equis* used as a nominal modifier (1st diachronic step)
- *Equis* used as a sentence modifier (2nd diachronic step)

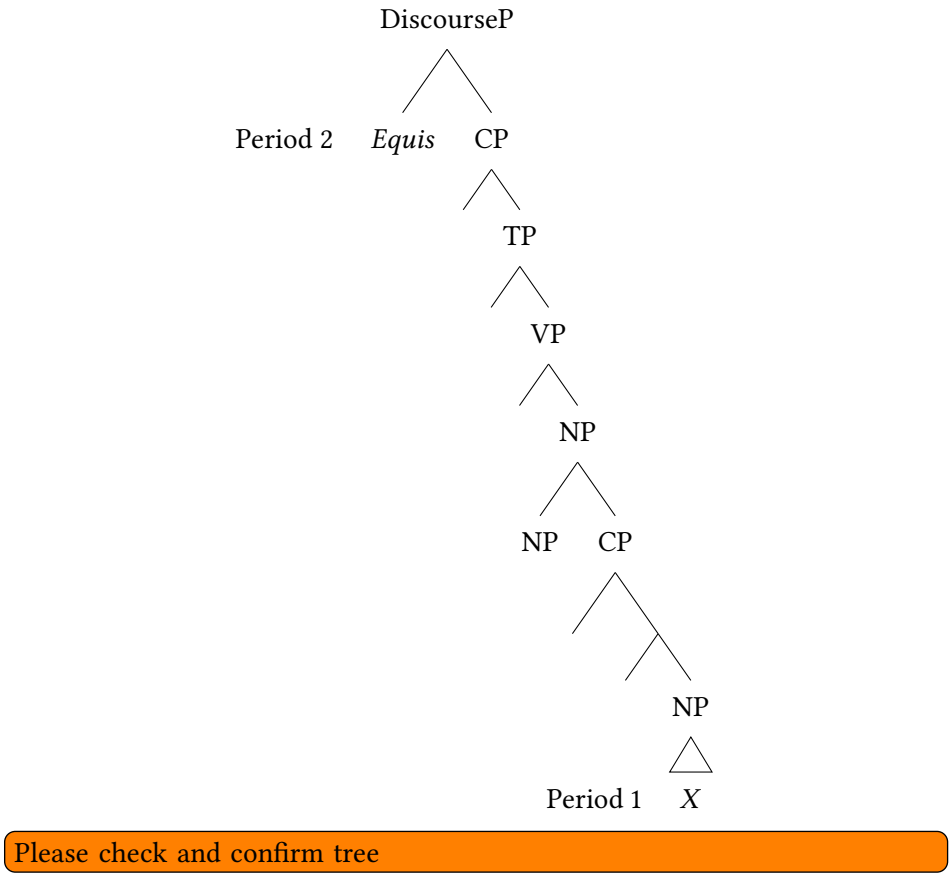

Figure 4: Diachronic shift of discourse adverb *equis*

4.3 Summing up and formulate predictions for corpus analysis

For a diachronic analysis, we have assumed that the variable use of *equis* is the trigger for other uses, namely the discourse adverb use and the predicative/adjectival use. The discourse adverb use is explained as the result of scope shift of speaker's indifference from nominal to sentential domain. The Indifference of the variable x is derived from Gricean Conversational Maximes. The predictions for the distribution of diachronic data our analysis makes are the following:

1. Variable use is expected to precede all other uses.

2. Variable use is expected to be found in all Spanish varieties and other languages.

3. Degree predicate use and discourse adverb use are the result of special diachronic processes and thus are not expected to be found in every Spanish variety and every language.

4. Speaker's indifference is expected to precede indifference of any other attitude holder (e.g. 3rd person). We thus expect *estuvo equis* 'it was ordinary/unimportant to me' to appear before *le parecio equis* 'she found it unimportant/ordinary.'

5. We should find the discourse adverb use and the predicative use of *equis* more often in oral and/or informal speech than in formal and written texts as these uses of *equis* lexically encode speaker's or agent's indifference.

The synchronic data meet predictions 2 and 3 as we have shown in Section 2 (see examples (7)-(8)). Other predictions are tested in the following section.

5 Testing our diachronic analysis by diachronic corpus data

In this section, we will discuss the diachronic distribution of *equis* and investigate the question of when the different synchronic uses of *equis* discussed in Section 2 appeared in diachrony and test the predictions derived from our analysis in Section 4.3.

The diachronic data was taken from corpus del espanol (CDE) Genre/ Historical: Mark, Davies. Corpus del Español. [http://www.corpusdelespanol.org/], November 2017. We have extracted 163 occ. of *equis* and classified them according to syntactic and semantic/pragmatic function as for the synchronic *equis* (see Section 2).

Equis increases in relative frequency in 20th c. (see Table 3, rel.freq. value 5.43 in 20th c. against all other values below 1 before 20th c.). Most occurrences of *equis* in 20th c. can be found in the text genre that represents oral speech (see freq. value of 24.57 in ORAL against other values in other registers below rel. freq. 3 in Table 3):

Before the 20th century, *equis* appears in Latin texts with the meaning 'horses' (39 occ. out of 42). In Spanish texts, *equis* has the variable or character use 'x' which is very infrequent (3 occ. out of 42) before 20th c.:

Table 3: Diachronic distribution of *equis* in CDE subcorpus diachr.

									20th c.			
Context *equis*		13th c.	14th c.	15th c.	16th c.	17th c.	18th c.	19th c.	20th c.	Acad.	News	Fict.	Oral
Per mil.	1.63	0.15		2.33	0.35	0.41	0.10	0.36	5.43	0.60	0.60	2.94	24.57
All	163	1		19	6	5	1	7	124	3	3	14	104

(67) en un tiempo «equis» anterior perteneció a la persona de Alejandro
in a time EQUIS before belonged to the person of Alejandro
'At some time x in the past, it belonged to the person Alejandro' (15th c.)

(68) En el Semontano hizo muchas equis.
in the Semontano made many EQUIS
'He made many Xs in the "Semontano".' (18th c.)

(69) «por respetos equis o tales» el hombre no se opondría a ello,
for respects EQUIS or so the man not it oppose to that
porque era «de un natural caballero y generoso, y sabía ponerse
because was of a natural gentleman and generous and knew placing
en todos los casos (18th c.)
in every the cases
'For some or other reasons, the man won't be against that because he was a real and generous gentleman and he knew how to react in every case.'

No Discourse adverb use of *equis* has been observed until the 20th century.[5] New functions and meanings appear in all varieties in the 20th century: prenominal and postnominal modifier and predicative function of *equis* with Speaker's

[5] As a reviewer has pointed out, the fact that *equis* was not found with a certain function in diachrony does not necessarily mean that this function did not exist at that time given that the corpus under investigation is relatively small. Therefore, the conclusion about the absence of some function can only be tentative. I agree with this conclusion and suggest to draw a stronger parallel to English *whatever!/whatevs!* in future research which shows a similar behavior and offers more diachronic data.

Ignorance (almost all in ORAL register), e.g. *equis razón* 'some reason but I don't know which one' or modifier of quantifier (*cada equis años* 'every certain year'), *una suma de dinero equis al mes* 'some amount of money X per month', *las agencias son equis* 'the agencies are X'. *Equis* has developed discourse adverb use with Speaker's Indifference in the 20th century (see §2).

The distribution of *equis* is summarized below in order to capture different uses of *equis* and their diachronic distribution:

Table 4: Summary of the diachronic data for the analysis

Uses of *equis*	**before 20th c.**	**20th c.**
Variable interpretation	+	+
Postnominal with evaluative interpretation 'unremarkable/unimportant'	–	+
Discourse adverb function with Indifference Interpretation	–	+
Predicative use with degree interpretation (modifiable by degree adverbs 'very')	–	+

The diachronic data shows that the prediction 1 and the prediction 5 are borne out empirically, i.e. the variable use precedes other uses (predicate and discourse use). The text genre prediction is also met, i.e. *equis* appears more often in oral speech genre. The diachronic data needs to be tested with respect to other predictions in future research, especially prediction 4 about the shift in attitude-holders.

Let us discuss whether the shift from variable x into discourse adverb *equis* can be considered as an instance of "subjectification" described in the literature on semantic change (Traugott 1995, Company Company 2003, among others). In the literature, subjectification is defined as a pragmatic-semantic process whereby "meanings become increasingly based in the speaker's subjective belief state/attitude toward the proposition", i.e. towards what the speaker is talking about (Traugott 1995: 31). We have seen in the diachronic data that the item *equis* was used to mean simply a variable in a written text genre that does not contain any dialogs or overt linguistic expression of speaker's beliefs or attitudes. This restriction changes in 20th century where *equis* starts to be used in oral speech in

dialogs that express speaker's attitudes such as indifference.This change seems to match the subjectification hypothesis. However, it is not true that speaker's indifference appeared out of the blue with the use of *equis* in oral text as the subjectification hypothesis might suggest. The indifference is also present in the variable use of *equis* but in contrast to the discourse use, the indifference is just a pragmatic inference and as such not lexically encoded. We thus assume that the subjectification hypothesis does not fully capture the diachronic process of *equis*.

6 Summary and outlook

In this article, we have shown different functions of Mexican Spanish *equis* and suggested to analyze them uniformly on the basis of the Indifference Inference. We started our analysis with von Fintel's 2000 analysis of Indifference derived from the counterfactual inference on English *whatever* free relatives. On our analysis, the variable *equis* or x can also be analysed in a similar way expressing counterfactual inference, i.e. the speaker is indifferent about which of the values of the variable *equis* or x holds in the actual world. This indifference inference is not lexically encoded in the variable use itself but follows from pragmatic principles. Later in time, the Indifference shifts from variables of entities to variables of propositions and the indifference inference becomes lexically encoded in the discourse adverb *equis*. The same happens with the degree predicate *equis* which encodes the indifference inference of the variable *equis* as a lexical property.

We believe that there is a parallel between the change of *equis* into a discourse adverb and the shift from *whatever* as an indefinite pronoun (e.g. I grabbed whatever tool was in front of me) to *whatever/whatevs* as discourse adverb in American English which expresses roughly that the speaker does not find it important whether the proposition mentioned previously in the discourse is true or not:

(70) A: This is true. B: Yeah, whatever.

We will investigate the parallel between the discourse adverb *equis* and *whatever/whatevs* in future research. Our diachronic data is taken from the diachronic subcorpus CDE that does not distinguish between Spanish varieties. In future, we need to look into diachronic corpora that do distinguish between varieties.[6] We also need to investigate whether *equis* as degree predicate can be modified by

[6]We briefly investigated *equis* in the Corpus Diacrónico y Diatópico del Español de América, CORDIAM, www.cordiam.org. It contains the total amount of 6435906 words from 19 countries of Latinamerica from 1494 to 1905, with Documents from archives, journals and literature. We

other degree modifiers such as modifiers used in comparative clauses. We found some examples in the Internet that need to be checked with speakers:

(71) sin duda una de las cosas más *equis* que he visto.
without doubt one of the things more EQUIS that have seen
'No doubt, it's the most unimportant/unremarkable/worst thing that I've ever seen.' (Internet)

We also need to check whether postnominal *equis* is restricted to indefinite nouns as our corpus data seem to suggest. Furthermore, we need to investigate whether degree modification is impossible/ungrammatical with discourse adverb *equis*:

(72) A: Some utterance x
B: (Muy) equis.
'I don't care about utterance x.' (to be checked in future)

If degree modification is possible with discourse adverb *equis*, it should be possible to unify the predicative *equis* and the discourse adverb *equis*. Moreover, we need to account for the meaning 'several, many' of *equis* combined with plural nouns (see Section 2.1). As *equis* is mostly used in informal speech and many of its uses represent a recent phenomenon, we expect to find speaker variation with the uses of *equis*. Thus, the data need to be checked systematically for speaker variation, too.

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did not find any use of discourse adverb or evaluative predicate as expected. Instead, we found the variable use x referring to some date or number, e.g. *México, x de noviembre, 1578* 'Mexico, x of November 1578'.

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Chapter 6

German *noch* under reanalysis

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This paper investigates (i) the semantics of present day German *noch* in comparative readings. In doing so it (ii) presents experimental work on comparative *noch*'s presuppositional meaning component. In the second part, I will (iii) provide a survey of diachronic data from the Old German period and (iv) propose a process of reanalysis for the comparative reading of *noch* based on its temporal reading.

1 Introduction

There is a good amount of synchronic work on German *noch* ('still/even/yet') and its various readings, uses and its logical equivalents and counterparts (e.g. König 1977; Löbner 1989; Ippolito 2007; Umbach 2009a; 2009b; 2012; Beck 2016a; 2016b). The major readings are temporal, additive, marginal, and comparative. By and large, these categories are clear, however, there are few blurred lines, inconsistencies and overlaps across the literature. What is missing is diachronic work tracing the development *noch* has undergone and how the various readings have come about. In this paper, I want to address the diachrony of the comparative reading of *noch* ($noch_{\text{comp}}$), more specifically, what its origins might be. After a brief introduction to the major uses on *noch* in Section 2, I will discuss the main contributions to the semantics of *noch* in Section 3. In Section 4, I will report on an experiment geared towards identifying the presuppositional properties of $noch_{\text{comp}}$ which, in turn, will inform the discussion on the semantics of ($noch_{\text{comp}}$) in Section 5. Section 6 will give an overview of the diachronic data which is the basis for the discussion of an analysis of diachronic change in Section 7. At the core of the proposal *noch* is undergoing a shift of scales – from a scale of times to a scale of degrees.

Martin Kopf-Giammanco. 2019. German *noch* under reanalysis. In Remus Gergel & Jonathan Watkins (eds.), *Change your booktitle in localmetadata.tex*, 151–187. Berlin: Language Science Press. DOI:??

2 Uses of *noch* in PD German

In this section I want to briefly revisit the major uses of present day *noch*:

(1) Peter ist noch im Büro.
Peter is still in the office.
'Peter is still at the office.'
→ temporal, continuative reading

(2) a. Assertion: Peter is at the office at t (reference time).
b. PSP: Peter is at the office at a relevant earlier time t* which immediately precedes t.

The example in (1) shows the temporal use of *noch* (*noch*$_{\text{temp}}$). Its semantics will play a central role in the discussion below and I will go into depth there. Sentence (3) shows the comparative use of *noch*. It is equally important for this paper. Its semantics and diachronic development will be discussed in depth. It has been suggested that the presuppositional contribution of *noch*$_{\text{comp}}$ is a condition on the context to the effect that the comparison base exceeds a contextually given standard (e.g. Hofstetter 2013):

(3) Maria ist noch größer als Peter.
Maria is still/even taller than Peter
'Maria is still/even taller than Peter.',
comparative reading

(4) a. Ass.: Mary is taller than Peter.
b. ?PSP: The standard term of comparison, Peter's height, is relatively high.

The following use is the marginal reading of *noch*. The basic idea is, for e.g. (5), that, out of all places that are in Austria, Salzburg is a marginal case.

(5) Salzburg ist noch in Österreich.
Salzburg is still in Austria
intended: 'Salzburg is in Austria but just barely (since it's so close to the border)'
→ marginal reading

(6) is an example for the temporal, subconstituent reading of *noch*. One could argue that, for (6), out of all the times in the morning the time that Lydia left is a marginal time.

(6) Lydia ist noch am Vormittag abgereist.
Lydia is still in the morning departed.
Intended: 'It was still morning when Lydia left.'
(taken and adapted from Beck (2016), her (27) and (28))
→ temporal, subconstituent reading

The last reading to be introduced here is the additive use of *noch*:

(7) (Felix hatte (schon) drei Bier.) Jetzt trinkt er noch ein Bier.
Felix had already three beers now drinks he still a beer
'Felix (already) had three beers. Now he is having another beer.'
→ additive reading

3 *Noch*$_{comp}$

Before entering the discussion on *noch*$_{\text{comp}}$'s diachronic development, we need to put the semantics for present-day *noch*$_{\text{comp}}$ in place. The following is a review of the literature on *noch*$_{\text{comp}}$ with a focus on the two most recent analyses of *noch*$_{\text{comp}}$ (Umbach 2009a; Hofstetter 2013), followed up by the report on an experiment which looked into the presuppositional meaning component of *noch*$_{\text{comp}}$.

The major contributors to the semantics of the comparative reading of *noch* are König (1977) and Umbach (2009a) as well as Hofstetter (2013)[1]. König (1977) analyses *noch*$_{\text{comp}}$ from a marginality point of view, i.e. sentences like (8) – in König's words – "imply a second comparison involving Peter" (ibid., p.189) based on the positive form of the adjective in *Peter is tall*:

(8) Maria ist noch größer als Peter.
Maria is still/even taller than Peter
'Maria is still taller than Peter.'

(9) ⟨noch/still, Peter ⟨λ, x ⟨Maria is taller than x⟩⟩⟩
(taken and adapted from König (1977), his (49'))

[1] Hofstetter (2013) has a focus on the Turkish evaluative intensifier *daha* which, especially in its use in comparatives, shares crucial properties with German *noch*.

The implicit comparison in *Peter is tall* compares *Peter* to a standard degree of tallness (i.e. average body height) and places Peter's height above that standard. Out of all individuals that are ranked on the scale of degrees of tallness, Peter is a marginal case (König 1977). Umbach (2009a), commenting on König (1977): there is a 'reversal of roles' when we compare this analysis (8 and 9) to König's analysis of a prototypical marginal reading of *noch* ($noch_{marg}$), cf. (10) and (11):

(10) Maria ist (gerade) noch größer als Peter.
Maria ist (just/barely) still taller than Peter.
'Maria is still taller than Peter (but only just).'

(11) ‹noch/still, Maria ‹λ,x ‹x is taller than Peter›››
(taken and adapted from König (1977), his (47'))

Umbach (2009a) fleshes out König's (1977) proposal and concludes that the role reversal is due to different syntactic structures. In a comparative reading *noch* combines with an AP (3) and in a marginality reading *noch* combines with a DegP (3).

(8′) [$_{CP}$ Maria [$_{VP}$ ist [$_{DegP}$ **[$_{AP}$ noch [$_{AP}$ größer]]** [als Adam]]]]

(10′) [$_{CP}$ Maria [$_{VP}$ ist **[$_{DegP}$ noch [$_{DegP}$ [$_{AP}$ größer] [als Peter]]]**]]
(taken and adapted from Umbach (2009a), her (17b.) and (18b.))

Umbach's (2009a) criticism of König's (1977) proposal is that it does not explain why a "comparative may trigger norm-relatedness when combined with comparative *noch*" (cf, Section 3.1, below). What is more, the diachronic data does not support a trajectory based on König's analysis. The comparative use of *noch* is attested considerably sooner than the marginal reading – at least as far as $noch_{marg}$ operating on a scale of degrees or paths is concerned.

3.1 Umbach's (2009a) analysis

The core of Umbach's (2009a) proposal is that $noch_{comp}$ is anaphoric and, thus, relates to a preceding comparison. Her discussion is based on anaphoricity and norm-relatedness which is entailed in some but not all contexts that $noch_{comp}$ can occur in, cf. (12) to (14); with +/– *NR* indicating norm relatedness arising (+) or not arising (–).

(12) a. Adam ist größer als Chris. Aber Berta ist NOCH größer (als Adam). –NR
'Adam is taller than Chris. But Berta is still taller (than Adam).'

b. Adam ist größer als 1,80m. Aber Berta ist NOCH größer (als Adam). –NR
'Adam is taller than 1.80m. But Berta is still taller (than Adam).'

(13) a. Adam ist groß. Aber Berta ist NOCH größer (als Adam). +NR
'Adam is tall. But Berta is still taller (than Adam).'

b. Adam ist nicht klein. Aber Berta ist NOCH größer (als Adam). –NR
'Adam is not small. But Berta is still taller (than Adam).'

(14) Berta ist NOCH größer als Adam. + NR
'Berta is still taller than Adam.'
(taken and adapted from Umbach 2009a, her (19) to (21))

According to Umbach (2009a), neither (12a), (12b) nor (13b) entail that Berta is taller than the norm. However, (13a) does entail norm-relatedness due the antecedent comparison involving the positive form of the same adjective as in the *noch*-sentence. This suggests that norm-relatedness is triggered by $noch_{\text{comp}}$ "if and only if the comparison base of the antecedent statement is given by the norm of the adjective in the *noch* comparative" (Umbach 2009a: p.10). In other words, the antecedent comparison needs to contain (i) the same adjective as the *noch*-sentence and (ii) the adjective must be in the positive form and (iii) provide a standard degree of tallness which (iv) serves as the comparison base of the antecedent comparison. These criteria do not hold for (12a) and (12b), where the comparison base of the antecedent is provided by the height of a third individual (*Chris*) or a measure phrase (*1.80m*), and for (13b), where a different norm is introduced by *klein* ('small').

$Noch_{\text{comp}}$ occurring in the third type of context ('out of the blue'), shown in (14), entail that both Adam and Berta are tall. Umbach suggests to analyze (14) along the lines of (13a) and take the antecedent to be accommodated. The accommodated antecedent will be of the form *Adam is taller than the tallness norm*, i.e. composed of the comparison base of the *noch*-sentence and the norm of the adjective.

Umbach's (2009a) conclusion is that comparative *noch*, in some but not all contexts, entailing norm-relatedness is a consequence of $noch_{\text{comp}}$ being "anaphoric requiring an antecedent comparison" (ibid., p.10). It is precisely the anaphoricity for an antecedent comparison that is in contrast to König's (1977) proposal which suggests that an existential presupposition of an additional individual is the contribution of $noch_{\text{comp}}$. Umbach's (2009a) point of view is that there is

an antecedent comparison, not an antecedent individual, with the comparison consisting of a pair in a degree-relation.

In formalizing the semantics of her analysis, Umbach cites (van der Sandt 1992) in following the "*presupposition-as-anaphors* paradigm" (Umbach 2009a: 11; her italics) and arrives at the interpretation of $noch_{comp}$ in (15). The underlined part is the presupposition, where y is provided by the standard term of comparison and d is a free variable bound by the antecedent comparison:

(15) [[[$_{AP}$ *noch* [$_{AP}$ *größer*]]]] = λy λx.: ht(y) > d. ht(x) > ht(y)
(cf. Umbach (2009a); her (24); her underlining)

(15) applied to (16a) would yield (16b). The free variable d can then be bound to one of the contexts in (12) and (13) which provide the degrees in (17): ht(chris), 1.80m, $d_{S\text{-}tall}$, $d_{S\text{-}small}$.

(16) a. Berta is NOCH größer als Adam.
'Berta is still taller than Adam.'
b. ht(adam) > d. ht(berta) > ht(adam)

(17) a. ht(adam) > ht(chris) 'Adam is taller than Chris.'
b. ht(adam) > 1.80m 'Adam is taller than 1.80m.'
c. ht(adam) > $d_{S\text{-}tall}$ 'Adam is tall.'
d. ht(adam) > $d_{S\text{-}small}$ 'Adam is not small.'
(cf. Umbach (2009a); her (25) and (26); her underlining)

Consequentially, according to Umbach, it will be entailed that Berta is taller than Chris, taller than 1.80m, taller than the tall-standard, or taller than the small-standard. However, that Berta is tall is only entailed by (**??**) – since Adam is tall and it is asserted that Berta is taller than Adam.

With regard to Umbach's interpretation of $noch_{comp}$ in (15), she points out a particular shortcoming when compared to König's (1977) proposal, namely the lack of "order – of time or marginality – which is commonly regarded as essential for the meaning of *noch*" (Umbach 2009a: p.12). Furthermore, additive *noch* ($noch_{add}$) as well as the temporal and marginality readings of *noch* relate to a scale, with $noch_{temp}$ relating to the order of times, $noch_{marg}$ relating to the order of marginality (or inverse prototypicality) and $noch_{add}$ relating to the order of mentioning. This order of mentioning is "frequently aligned with a contextually given 'semantic' scale, for example, time in narratives" (Umbach 2009a: p.12). And further:

> Comparative *noch* requires an antecedent. This is what makes it additive. The related scale is, first of all, to [sic!] the order of mentioning. But the order of mentioning is aligned to the order of degrees given by the adjective of the *noch*-comparative such that the latter preserves the former: If comparison1 one [sic!] precedes comparison2 in mentioning, the comparison subject of comparison1 has to precede the comparison subject and the comparison base of comparison2 with respect to the order of degrees. (Umbach 2009a: p.13)

Essentially, Umbach states that all uses of *noch* are scalar, with the additive use of *noch* relating to the order of mention and the comparative use of *noch* being "subsumed as a particular instance of the additive reading relating primarily to the order of mention and secondarily to the degrees given by the adjective" (Umbach 2009a: p.14).

3.2 Hofstetter's (2013) analysis of *noch*$_{comp}$

For the following discussion, I turn back to example (8) (= (18), below). Hofstetter (2013) assumes that the PSP for *noch*$_{\text{comp}}$ demands that Peter's height is relatively tall, i.e. exceeds a contextually given standard, regardless of what the context is:

(18) Maria ist noch größer als Peter.
Maria is still/even taller than Peter
'Maria is still taller than Peter.'

(19) a. Ass.: Mary is taller than Peter.
b. PSP: The standard term of comparison, Peter's height, is relatively high.

(20) $[[\text{noch}_{\text{comp}}]] = \lambda\text{Comp.Op.} \in D_{<<d,t>,<<d,t>,t>>}.\lambda D_1 \in D_{<d,t>}.\lambda D_2 \in D_{<d,t>}$:
$\underline{\exists d' \in D_d[D_1(d') \,\&\, d' > s_c]}$. Comp.Op. (D_1) (D_2),
where "s_c" is a standard degree of height provided by the context
and "Comp.Op." is the comparative operator.[2]
(adapted from Hofstetter (2013), his (2/59); my underlining)

The underlined part in (20) points to the PSP that the comparison base of the *noch*-comparison, d' exceeds a contextually given standard. In other words, there

[2] Hofstetter writes this as $[[still_{evaluative}]]$. However, he states that German *noch* and English *still* share the same properties and are equivalent (Hofstetter 2013: 31).

is no norm-relatedness involved in Hofstetter's semantics for *noch*$_{\text{comp}}$ and not the same anaphoricity as in Umbach's (2009a) analysis.

Hofstetter applies the S-family test (Kadmon 2001) for presupposition but does so only for English *still* in an exemplary fashion and concludes that the test "clearly reveals that all members of the family directly presuppose that Peter is comparatively tall". Unfortunately, Hofstetter does not provide any introspective reasoning as to the projection behavior of the proposed PSP.[3]

What Hofstetter does provide is judgment on the following sentence when testing if the meaning component in question in cancelable:

(21) *Paul ist noch größer als Peter, aber Peter ist nicht groß.
Paul is still tall.COMP than Peter but Peter is not tall
Intended as: '*Paul is still taller than Peter, but Peter is not tall.'
(taken and adapted from Hofstetter 2013: p.27; his (2/49))

The judgment in (21), (*), is in line with Umbach's (2009a) 'out of the blue'-example (14). It presupposes an antecedent comparison of the form *Peter is tall* and NRness arises. Consequentially, Hofstetter (2013) sees his intuition confirmed since it is one the hallmark criteria for PSP that they are not cancelable. If we provide antecedents along the lines of Umbach (cf. 12 to 14), we can see that the PSP does not arise/can be canceled:

(22) a. Peter ist größer als Phil. Paul ist noch größer als Peter, aber Peter ist nicht groß.
'Peter is taller than Phil. Paul is still/even taller than Peter, but Peter is not tall.'

b. Peter ist größer als 1,80m. Paul ist noch größer als Peter, aber Peter ist nicht groß.
'Peter is taller than 1.80m. Paul is still/even taller than Peter, but Peter is not tall.'

c. *Peter ist groß. Paul ist noch größer als Peter, aber Peter ist nicht groß.
'Peter is tall. Paul is still/even taller than Peter, but Peter is not tall.'

[3]It seems odd to rely on English *still* as an equivalent for the German *noch*$_{\text{comp}}$ since American English speakers report that for translations of sentences like (18) they immediately get a temporal reading/a temporal reading is salient for them. It seems to be British English that allows *still* as an equivalent for *noch* in comparative uses. Speakers of American English seem to prefer *even* which, in turn, translates into German as *sogar*. In conclusion and want for a 'better equivalent', I will rely on "*still/even*" for the glosses in this paper – for now.

d. Peter ist nicht klein. Paul ist noch größer als Peter, aber Peter ist nicht groß.
'Peter is not short. Paul is still/even taller than Peter, but Peter is not tall.'

For all examples in (22), we have Hofstetter's sentence from (21) paired with an antecedent sentence fashioned after Umbach's design. All of these utterances are good and felicitous – except (22c), where the assertion in the antecedent sentence is contradicted by the final clause *…aber Peter ist nicht groß* ('…but Peter is not tall'). Conversely, contradicting a PSP in the other utterances (22a, 22b, 22d) should not be possible. Looking at the individual utterances in turn reveals that none of these entail that Peter (or Paul) are tall. These bits of introspective data indicate that Hofstetter's entry for $noch_{\text{comp}}$ is too restrictive regarding its PSP-component.

4 Experiment – norm-relatedness vs. PSP

4.1 Overview and material

In order to get a clearer picture, an experiment was conducted. At the heart of the experiment, Hofstetter's (2013) analysis, i.e. German $noch_{\text{comp}}$ triggers the presupposition that the standard term of comparison is taller than a contextually given standard, and Umbach's (2009a) analysis based on norm-relatedness (NRness) were tested against one another.

Table 3 shows one out of 16 token sets. Every token set consists of four target items which, in Table 3, are spread out across the four lines/conditions (for details on the conditions, cf. Section 4.2). Every target item consists of both 'condition' and 'continuation'. The continuation is the same across all conditions.[4] 16 such token sets were created (cf. appendix, p. 194f. for an overview).

The token sets were based on 16 predicative adjectives, thus, in total there were 64 target items. The 16 token sets were split into 8 antonym pairs (*groß–klein*, 'tall–short' etc.) which shared contexts when possible. Differing contexts were created when necessary. Female and male names were counterbalanced (3 female, 3 male), the remaining items are inanimate and unnamed individuals.

The 64 target items were split into eight 'questionnaire groups'[5] which was done in order to prevent response fatigue and reduce questionnaire duration. Ev-

[4] In the questionnaires, condition and continuation were presented as one string, without the gaps in Table (3). They are included here for ease of representation.

[5] This is not to be confused with 'groups', i.e. specific groups completing specific conditions.

Table 1: 4 conditions per token set

condition	condition			continuation
1	A ist groß 'A is tall	und C ist noch größer als A. and C is still taller than A.		Dabei ist A nicht groß. *And yet A is not tall.'*
2	A ist groß 'A is tall	und C ist and C is	größer als A. taller than A.	Dabei ist A nicht groß. *And yet A is not tall.'*
3	A ist größer als B 'A is taller than B	und C ist noch größer als A. and C is still taller than A.		Dabei ist A nicht groß. *And yet A is not tall.'*
4	A ist größer als B 'A is taller than B	und C ist and C is	größer als A. taller than A.	Dabei ist A nicht groß. *And yet A is not tall.'*

ery participant rated eight different target items – two from every condition and, at the same time, two from every token set. The 64 items were rotated among the questionnaire groups, for details I would like to refer to the appendix, specifically Table 12, 198.

In addition to the target items, 16 fillers were created which were the same across all questionnaire groups, i.a. across all participants. The fillers were designed based on the following criteria. They were made to 'look' the same; i.e. they consisted of two sentences, the first of which consisting of two clauses. No item was to contain (any use of) *noch*. Moreover, the design required to avoid comparatives and predicative adjectives. There were two very bad fillers in order to prevent response fatigue and test for subject attention. German *auch* ('also/-too') was used as a distractor; ten filler items contained *auch*, six did not. Male and female names were counterbalanced (8 & 8). The filler items were based on parallel/similar contexts as the test items – as far as possible; for 'good' fillers – contrasting contexts were created (*to like/dislike; to play an instrument well/awfully, ...*).

4.2 Experimental design, methods and participants

The experiment was based on a two by two design, that is two factors with two levels each. The first factor was the proposition *A is tall* being asserted in the first clause (level 1, '`ass`') or not (level 2, '`com`', i.e. for *comparative* instead of assertion). The second factor was *noch* being absent (level 1, '`-n`') or present (level 2, '`+n`').

This resulted in four conditions as shown in Table 2. For ease of representation and readability, I will use conditions 1 – 4 rather than the factor-level combinations for the discussion below. The four conditions amount to four minimal pairs. The numbering of the four conditions (1 through 4) and their vertical representation in the above table does not indicate any ranking as to the predictions for experimental ratings by either Umbach or Hofstetter.

Table 2: 2x2 design ⟶ 4 conditions

	factor 1	
factor 2	level 1	level 2
level 1	`ass_–n` ⟶ condition 2	`com_–n` ⟶ condition 4
level 2	`ass_+n` ⟶ condition 1	`com_+n` ⟶ condition 3

Subjects were presented with the respective target item. They were instructed to imagine that the first sentence (condition) and the second sentence (continuation) are uttered by one person in one situation. Their task was described as to judge whether both sentences can be true in one and the same situation. For every item the prompt was *Können beide Sätze als wahr geäußert werden?* ('Can both sentences be uttered as true?'). Subjects had a 6-point scale at their disposal ranging from *Nein, ganz sicher nicht.* ('No, definitely not'; 1 point) to *Ja, ganz sicher.* ('Yes, definitely'; 6 points), with these two as the only labels, at both ends of the scale. In the following, I will refer to high ratings of (close to) 6 points as 'good' rating and vice versa to low ratings as 'bad'.

4.3 Predictions

For conditions 1 and 2, both Hofstetter's and Umbach's predictions are that they are rated as 'bad' since the (identical) continuations contradict the assertions.

Condition 3 is the critical condition. Hofstetter's prediction here is that participants would rate it as 'bad' since the continuation should contradict the PSP that *A is tall*. This is due to A's height being presupposed as exceeding a contextual standard (cf. (20), p.167). Arguably, following Hofstetter, one might expect ratings similar to condition 1 where the proposition 'A is tall' is asserted and then contradicted in the continuation. Umbach's prediction for condition 3 is that it should be rated as 'good' since norm relatedness (and the inference that C or A are tall) should not arise here and, thus, there is no contradiction. This is due to

the free variable *d* (cf. (15)) being bound to an antecedent comparison of the form in (17a).

For condition 4, both Hofstetter and Umbach predict 'good' ratings – *A is tall* is not asserted (factor 1, level 2), hence no contradiction with the continuation, and *noch* is absent (factor 2, level 2), hence no PSP can be triggered (for Hofstetter) or norm relatedness cannot arise (for Umbach).

As mentioned, condition 3 is the critical condition where Hofstetter's (2013) analysis, and Umbach's (2009a) analysis have differing predictions:

Table (3) sums up the structure of items in all conditions and the respective predictions in terms of ratings:

Table 3: Experimental design; NR-ness; 4 conditions, 2x2

cd_fac_lev	condition			continuation	Hs.[a]	Um.[b]
1_ass_+n	A ist groß 'A is tall	und C ist noch größer als A. and C is still taller than A.		Dabei ist A nicht groß. *And yet A is not tall.'*	bad	bad
2_ass_–n	A ist groß 'A is tall	und C ist and C is	größer als A. taller than A.	Dabei ist A nicht groß. *And yet A is not tall.'*	bad	bad
3_com_+n	A ist größer als B 'A is taller than B	und C ist noch größer als A. and C is still taller than A.		Dabei ist A nicht groß. *And yet A is not tall.'*	**bad**	**good**
4_com_–n	A ist größer als B 'A is taller than B	und C ist and C is	größer als A. taller than A.	Dabei ist A nicht groß. *And yet A is not tall.'*	good	good

[a] Hofstetter's prediction
[b] Umbach's prediction

A final note on experimental design and the decisions made along the way: The experiment underwent a number of developmental stages and updates due to test runs yielding inconclusive results. For example, items fashioned after other examples from the existing literature were considered (e.g. (21) with adversative *aber*, 'but') as well as weaker formulations in the prompts were considered instead of asking for truth judgments (i.e. tapping into participants' logical/structural thinking). The latter decision was made in order to avoid issues of (non-)accommodation and processing effects.

The questionnaires were compiled and published on *SoSci - der Online Fragebogen* (2019) which provides a singly survey link and randomly selects questionnaires if anybody enters the study via the survey link. The survey link was shared on Johé (2019) and various social media accounts.

4.4 Participants

123 participants completed the study. The following meta-data are reported as available: Participants' ages ranged from 18 to 72 years old at an average age of 26.4 years. 74 identified as female, 35 identified as male, 14 did not identify. In terms of country of origin ('Where did you grow up?'), 81 participants were from Germany, 18 from Austria, one from Switzerland, and one from Italy, the rest of the participants did not disclose that information.

4.5 Data processing

Starting with 123 responses, I excluded subjects (i) whose native language wasn't German (10 participants did not disclose their native language at all and were excluded), (ii) who did not give positive consent to use their responses, (iii) who indicated negative overall commitment to the experiment, (iv) who who indicated that their responses should not be considered meaningful responses and (v) who admitted to having been distracted multiple times throughout the questionnaire. This resulted in 95 admissible participants. Disregarding filler items, each participant rated 8 items (2 from each of the 4 conditions), resulting in 760 data points overall, with 190 data points for every condition.

4.6 Results

4.6.1 Descriptive statistics

The following provides a first look at the results in terms of descriptive statistics. By and large, the results seem to support Umbach's (2009a) analysis. As expected without any bias for or against any of the analyses, conditions 1 (`ass_+n`) and 2 (`ass_-n`), where the assertion that e.g. *x ist groß* ('x is tall') is contradicted by the continuation, received low ratings when asked if both sentences can be uttered as true – the medians for both conditions are 1.0, cf. Table 4 and Figure 1, below. However, conditions 3 (`com_+n`) and 4 (`com_-n`), received quite high ratings with both their medians at 5.0. For more descriptive statistics see Figures 1 and 2 – for box plots and histograms respectively. See below, Section ??ff., for a more detailed discussion of the results based on more detailed statistical analysis.

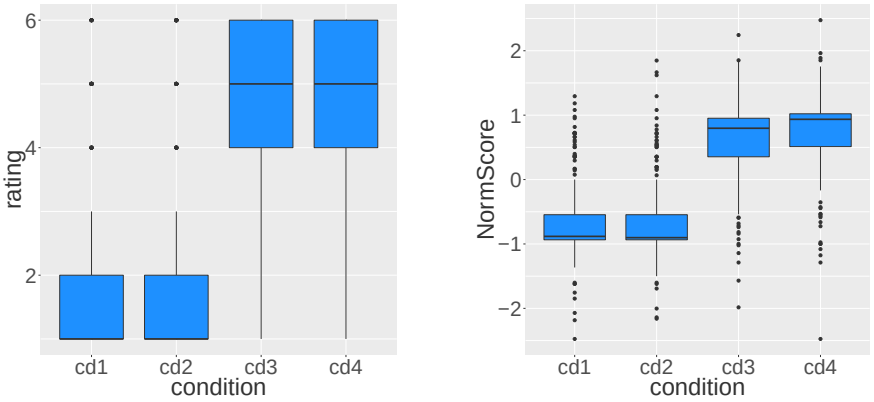

Figure 1: Ratings (left) and norm scores (right) over 4 conditions

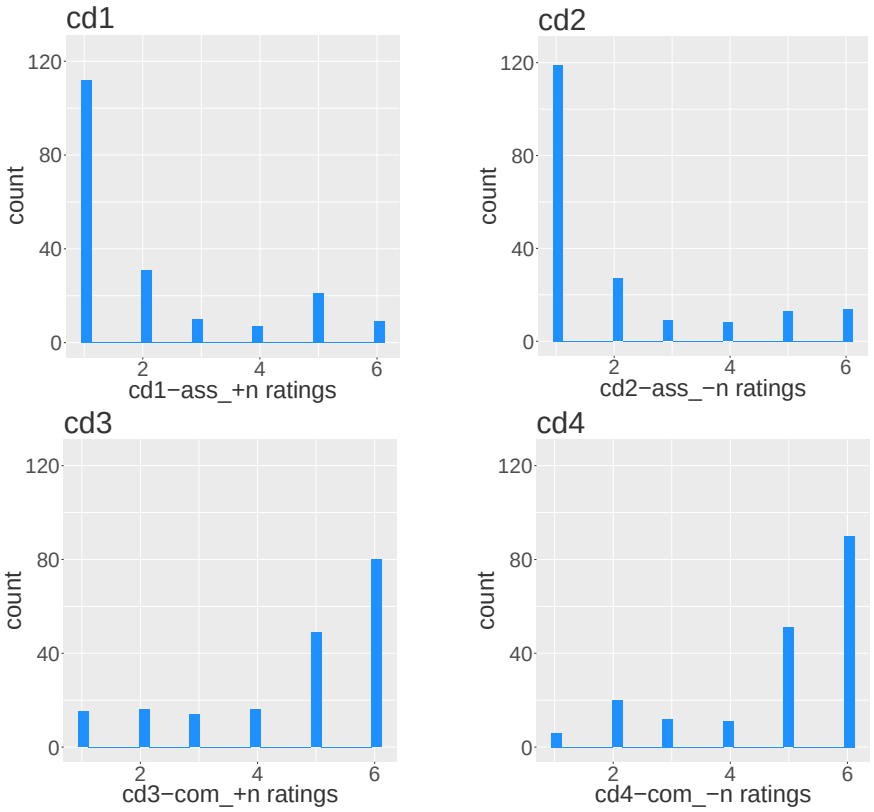

Figure 2: Histograms of 4 conditions (2 factors, 2 levels each)

Table 4: Descriptive statistics for the 4 conditions

	cd1_ass_+n	cd2_ass_-n	cd3_com_+n	cd4_com_-n
N	190	190	190	190
Mean	2.058	2.005	4.621	4.847
Median	1.000	1.000	5.000	5.000
Std. Div.	1.597556	1.628117	1.640615	1.49173
Minimum	1	1	1	1
Maximum	6	6	6	6

4.6.2 Linear Mixed Effect Model

I built linear mixed effects models for my data with R (**r_software**)[6] with the lme4-package[7] (Bates et al. 2015). The ratings (from 1 to 6) were z-transformed into norm scores. That is, for every participant I calculated means (part_mean) and standard deviations (part_sd) and then for all eight ratings per participant (cf. Figure 1 for boxplots of ratings and normscores):

(23) $$\text{norm score} = \frac{\text{rating}-\text{part\_sd}}{\text{part\_mean}}$$

For the further discussion on statistic modelling, the terms *norm score* and *score* will be used synonymously. For model 1, score is taken as a function of an interaction of the fixed effects (factor 1: Assertion of '*x is tall*' (level 1) or not (level 2); factor 2: *noch* absent (level 1) or present (level 2)) and model 2 is a reduced version of model 1, i.e. without the interaction as in model_1. Both models accounts for participants and contexts as random effects assigning random intercepts. I was able to also include random slopes for both factors correlated with the respective two random intercepts, resulting in a maximally random effects structure for my models. Find the outline of the basic structure for model 1 in (24) and for model 2 in (25):

(24) score ~fac.1 * fac.2 + (1 + fac.1 * fac.2 | partcpt.) + (1 + fac.1 * fac.2 | context) + ε

[6] R version 3.6.0 (2019-04-26)
[7] lme4 version 1.1-12

(25) score ~fac.1 + fac.2 + (1 + fac.1 * fac.2 | partcpt.) + (1 + fac.1 * fac.2 | context) + ε

Find the outpout for model 1 in (5). Note, I have used the lmerTest-package[8] (Kuznetsova et al. 2017) to add p-values to the lmer-summary:

Table 5: R output for `lmer()` call on model **1** (24)

Fixed effects:	Estimate	Std. Error	df	t value	Pr(>|t|)	
`(Interecept)`	−0.65142	0.05822	46.21000	−11.190	9.5×10^{-15}	***
`fac_1com`	1.36396	0.08936	45.32000	15.264	$<2 \times 10^{-16}$	***
`fac_2+n`	−0.01899	0.08184	21.78000	−0.232	0.819	
`fac_1com:fac_2+n`	−0.09008	0.10438	17.99000	−0.863	0.399	

Factor 1, level 2 (com) has a significant effect with a t-value at 15.264 and a p-value below 2e-16. Most importantly, there is no significant effect of factor 2(+/ – *noch*), level 2 with a p-value of 0.819, cf. (5). Moreover, there is not interaction between factor 1, level 2 and factor 2, level 2. To be sure and test specifically for an interaction between factors 1 and 2 I calculated model 2. Comparing models 1 and 2 (in R with the `anova()` call) gives the following output (cf. Winter 2013):

Table 6: R output for `anova()` call on models **1** and **2**

	DF	AIC	BIC	logLik	deviance	Chisq Chi	Df	Pr(>Chisq)
`mymodel 2`	24	1467.2	1577.8	-709.58	1419.2			
`mymodel 1`	25	1468.4	1583.7	-709.20	1418.4	0.7649	1	0.3818

Model 2 has a slightly lower AIC and in the comparison of the two models the difference comes out as not significant. This suggests that there is no interaction between factors 1 and 2 ($\chi^2(1)$=0.7649, p=0.3818). There is an online repository containing the experimental data, statistics scripts, find the link in the footnote below[9] *GitHub* (2019).

[8] lmerTest version 3.1-0

[9] https://github.com/M-K-G/noch_FoDS2

4.7 Conclusions

At first glance, the results seem to support Umbach's (2009a) analysis. It seems that the non-asserted proposition, i.e. that the standard term of comparison in a *noch*-comparative exceeds a contextually given standard degree, can be canceled and may, therefore, not be regarded presuppositional.

As pointed out by an anonymous reviewer, there may be flaws inherent to the experimental design to the effect that, in line with Hofstetter's analysis, the PSP of *noch* in condition 3 is unmet, remains non-accommodated and nothing should be there to contradict/cancel by the continuation. Among other things, it was exactly this point that we attempted to address by asking participants to judge the compatibility of the truth of two sentences. Nevertheless, the issue may remain.

A few of the desiderata in retrospect is the lack of judgments for data like (Hofstetter's) (21) (repeated here as (26)). What is it that makes this sentence seemingly infelicitous and under what circumstance could this sentence be felicitous. Would an antecedent comparison as in (27) (cf. conditions 3 and 4 above) make (26) felicitous? It is possible – in this instance I do not have reliable introspective judgments and conclude that more experimental work is required taking a different approach in eliciting judgments.

(26) *Paul ist noch größer als Peter, aber Peter ist nicht groß. (taken and adapted from Hofstetter 2013: p.27; his (2/49))
Paul is still tall.COMP than Peter but Peter is not tall

(27) ?Peter ist größer als Kurt. Paul ist noch größer als Peter, aber Peter ist nicht groß.
Peter is tall.COMP than Kurt Paul is still tall.COMP than Peter but Peter is not tall
'*Peter is taller than Kurt. Paul is still taller than Peter but Peter is not tall.*'

With these caveats in mind, and accepting the results of the above experiment, I will turn back to the semantics of *noch* in the next section.

5 Updating the semantics of *noch*$_{\text{comp}}$

Based on the above findings, I propose to update the lexical entry for *noch*$_{\text{comp}}$:

(28) $[[\text{noch}_{\text{comp}}]]=\lambda d^{*}\in D_{d}.\lambda CO\in D_{<<d,t>,<<d,t>,t>>}.\lambda D_{1}\in D_{<d,t>}.\lambda D_{2}\in D_{<d,t>}$:
$d^{*} \leq \max(D_{1})$. CO $\max(D_{1})$ $\max(D_{2})$,

where d* is a free variable to be bound by the context and ranked lower than the max-degree of the comparison base
Co is the comparative operator of the *noch*-comparison.

I assume clausal comparison with the comparison operator of type: <<d,t>, <<d,t>,t>> (cf. Beck 2011) and the lexical entry in (29). The logical form for sentence (30a) (= (14)) is in (30b) where one can see that quantifier raising solves the problem of the type mismatch of the DegP and adjective (for both clauses). Via predicate abstraction in (31a) and intermediate steps in (32)(relying on the lexical entry (29)), the LF in (30b) yields (33) (relying on the lexical entry for *noch* in (28)), cf. LF in (3).

(29) [[-er]] = λD1.λD2. max(D2) > max(D1)

(30) a. Berta ist noch größer als Adam.
b. noch d* [-er than [2[Adam ist [AP t2 groß]] [1 [Berta ist [AP t1 groß]]]]]

(31) a. [1 [Berta ist [AP t1 groß]]] = λd. B is d-tall
b. [2 [Adam ist [AP t2 groß]]] = λd. A is d-tall

(32) [noch d* [λD1.λD2. max(λd. B is d-tall) > max(λd′. A is d′-tall)]]

(33) λd*.λD_1.λD_2: d*≤max(λd. A is d-tall). max(λd. A is d-tall)< max(λd. B is d-tall)

(34) (30a) is defined only if Adam is taller than something else relevant, i.e. the degree d*, provided by the context, and it is true if and only if Berta is taller than Adam.

There is no condition on the context that Adam is taller than a contextually given standard. Thus, norm relatedness does not arise (cf. Umbach 2009a and Section 3.1), which seems to be the desired situation given the experiment reported above. In essence, the free degree variable *d** is what norm relatedness hinges on. Depending on what in the context d* refers to, *noch* will give rise to norm relatedness. Let's assume the context provides a proposition along the lines of condition 1 (cf. Table 1, p. 170), e.g. *Adam ist groß* ('Adam is tall') preceding (30a). In such a case, the maximum degree to which *Adam is tall* (i.e. comparison base of *noch*-comparative) is equal or higher than the degree of the height of Adam as per the proposition from the context – which comes with a positive operator

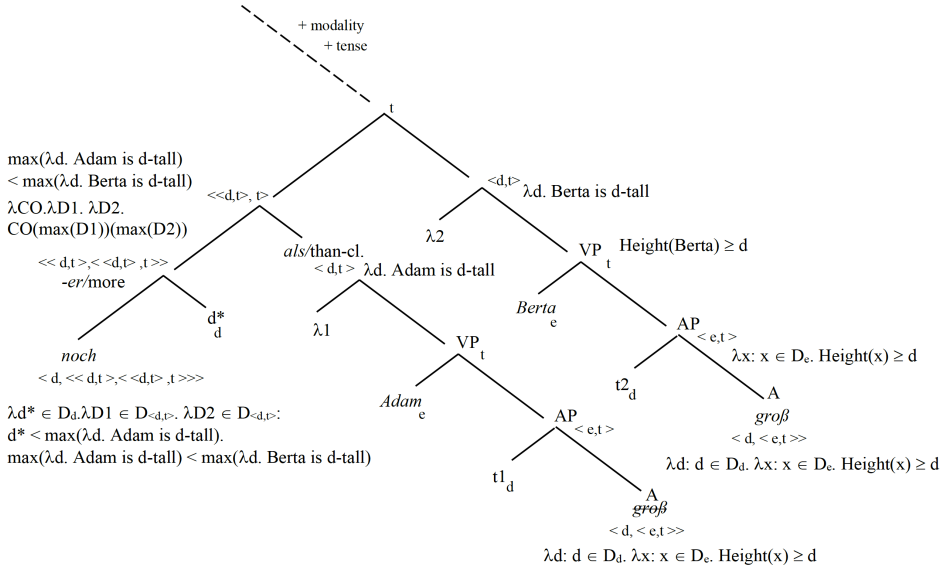

Figure 3: LF for (30a)

and puts Adam's height above a standard of height. Umbach (2009a) points to this aspect of meaning of positive degree adjectives in the context of *noch*$_{\text{comp}}$. So does, more generally, von Stechow (2006)(also e.g. (von Stechow 1984), (Beck 2011)): The idea is that there is a scale *S* introduced by an adjective, e.g. tall, and there is a function *N* that yields the neutral part of the scale and the neutral part *N(S)* contains all elements that are neutral in terms of tallness. The positive operator universally quantifies over all the degrees contained in the neutral part of the scale. (von Stechow 2006)

(35) S |--------[--------------------]---------→|
. short Neutral tall

(36) Adam is tall.
$[[\textbf{Pos}_{N,S}]]^g = \lambda A_{dt}.(\forall d \in N(S))\ A(d)$

(37) The Positive Operator
$[[\textbf{Pos}_{N,S}\lambda d.\text{tall}_S(d)(\text{Adam})]]$ iff $(\forall d \in N(S))$ HEIGHT(Adam) ≥ (d)
|--------[--------------------]----E---→|
(taken and adapted from von Stechow (2006), his (3-1) to (3-3))

With regard to the semantics of *noch*, if there is no such proposition in the context but e.g. a comparison as in condition 3 (cf. Table 1, p. 170), then there is no Pos-operator involved (von Stechow 1984: 62) and, in Umbach's words, norm-relatedness does not arise.

(38) Berta ist noch größer als Adam.

The question that has remained unanswered is what happens in out-of-the-blue *noch*-comparatives – with no overt antecedent. Umbach argues that for (30a) (repeated here as (38)) an antecedent gets accommodated as being "composed out of the comparison base of the *noch* comparative and the norm of the adjective (with respect to the comparison class)" (Umbach 2009a: 10). Essentially, this accommodated antecedent is of the form 'Adam is tall', i.e. it features von Stechow's (2006) Pos-operator.

6 Diachronic Data

The following discussion mainly relies on data from the DDD corpora of Old German (OG) (Donhauser et al.) via ANNIS (Krause & Zeldes 2016). Other supplementary sources include (*Kali Korpus* n.d.), and the TITUS project (Gippert et al. n.d.).

The OG period was split into subperiods: OG0 – pre-750; OG1 – 750-850; OG2 – 850-950; OG3 – 950-1050. The existing part-of-speech (pos) annotation was supplemented with annotations specifically geared towards occurrences of *noh*, the OG form of ModGerman *noch* (in the following, I will use the two forms interchangeably). The existing (DDD) POS tags for *noh* are ADV (adverbial) and KON (conjunctive). For this paper, I ignore conjunctive uses of *noh* such as in (39). The ADV occurrences of *noh* were – on top of the existing annotation – annotated for temporal, additive and comparative uses, i.e. $noch_{\text{temp}}$, $noch_{\text{add}}$, and $noch_{\text{comp}}$.

(39) Nist thes gisceid **noh** giuuant, uuio er girrit thaz lant, uuio
Not-is of.this boundary **nor** measure, how he confuses the land, how
er iz allaz uuirrit, ioh thesa uuorolt merrit.
he it all stirs, and this world injures.
'There is neither boundary nor measure to which he disturbs the country as he causes it trouble and to the entire world.'
(Otfried DDD_O_Otfr.Ev.4.20 (edition 278 - 289) via ANNIS.)

The following is an overview of occurrences of *noh/noch* in the diachronic data available in the DDD corpus:

The following table shows the frequencies of all occurrences of adverbial uses of *noh* across the subperiods OG1 – OG3 in all of the text of the DDD corpus:
Regarding OG1, the Heliand text had to be excluded since its periodisation is unclear with two different sources having found their way into the corpus texts.

Otfried is the only major text available from OG2 (and unfortunately in verse) and, therefore, was included. The additional material available from OG2 are minor hits from the Smaller Old High German Language-Monuments ('Kleinere Althochdeutsche Sprachdenkmäler') which, in turn, are difficult to pin down in terms of periodisation as a whole. Hits from single texts were considered for annotation. The following numbers in Table 9 are based on the final selection of corpus text considered:
A full annotation of 214 tokens from the OG3 (Notker) texts is incomplete as of yet. The numbers in the above table are based on 76 OG3-tokens annotated in detail and are to be taken representative for the entire subperiod. Among the 76 tokens categorized, there was one *noh* with an unambiguously comparative reading. The annotation of 76 tokens was supplemented with targeted corpus searches for *no(c)h*$_{\text{comp}}$ uses, with various queries among all 214 uses of *noh* in the Notker texts which yielded two more hits of *no(c)h*$_{\text{comp}}$, bringing the total for OG3 to 78 tokens.

In the following, I want to discuss the most important aspects and examples of the diachronic data. The most problematic bit of diachronic data is (40):

(40) Ibu auuar in aftrun steti ga sizzis enti quuimit dir otlihhero qui dit daer
If but in back place you.sit, and comes you 'lower', says, who
dih za demo naht muose la dota, sizzi.2SG.IMP NOH hohoro.COMP
you to the dinner invited, sit still/even higher
baz.COMP enti ist dir danne guot lihhora;
better, and is you then honorable
'But if you sit down somewhere in the less prominent places and the person who invited you for dinner tells you to sit in a more prominent place, then it is better to sit still higher and that is then honorable.'
(MonsF-1,M.XIV,edition141-152)

(40) is problematic for a number of reasons. The most striking problem is that it could be a very early instance of *noh*$_{\text{comp}}$. Example (40) is the reason that, in Table 9, the first line for *noh*$_{\text{comp}}$ shows '1(1/0?)'. Let us look at it in more detail: The wider context is about humility and humbleness. (40) is part of an allegory and the allegorical context is limited in potential to disambiguate. The preceding

Table 7: Subperiods and sources; KON vs. ADV

OG1:	form	KON	ADV
Tatian:	prose	95	43
Isidor:	prose	11	9
Monsee Fragments:	prose	8	4
Heliand:	verse	2	36
Old Saxon Genesis:	verse	0	5
OG2:	form	KON	ADV
Otfried:	verse	51	72
Smaller OG language monuments	(mix.)	100	12
OG3:	form	KON	ADV
Notker (various)	prose	96	118

Table 8: Frequencies of *noh* (ADV), based on no. of tokens in OG subperiods

subperiod	freq. (%)
OG1	0.073
OG2	0.088
OG3	0.070[a]

[a]The frequency for OG3 is is an approximation since the corpora's word counts include the parts in Latin.

Table 9: Subperiods and readings of *noh*. These numbers do not straight forwardly match numbers in Table 7 since they account for ambiguities, only show *noch* labelled as ADV, and are based on a smaller set of texts.

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	(cjn)	temp (amb.)[a]	comp (amb.)	add (amb.)
OG1	(122)	45 (8)	1 (1/0?)	12 (4)
OG2	(66)	53 (6)	2 (2)	8 (6)
OG3	(54)	21 (4)	3 (0)	4 (4)

context talks about how shameful it is to take a prominent seat at a table when invited to dinner and then being told to take a less prominent seat.

The comparative reading doesn't have strong support as the expected action to attain humility (in a Christian world view) would be to turn down an offer to sit higher/take a more prominent seat. A temporal (further-to) interpretation runs into the problem that this is a hypothetical situation and there is no detectable temporal sequence aside from the salient time of mentioning. Moreover, in contrast to the majority of early uses of *noch*, it lacks a temporal particle adjacent to it. A conjunctive, coordinating interpretation would require another negative constituent to be coordinated with. The example is from the Mondsee Fragments, it is in Bavarian dialect and dates from the early 9th century (~ 810AD)(Krause & Zeldes 2016). Thus, if (40) constitutes an instance of $noch_{comp}$, it would (i) indicate that Southern dialects of German might have been more innovative and (ii) mean that the comparative reading has been available relatively soon.

Let us turn to more examples of diachronic data, especially ones ambiguous for temporal and comparative readings (both (41) and (42) are from Otfrid (OG2)):

(41) Ladotun auur tho then man, ther thes gisiunes biquam, quadun,
invited but then the man, who of.the seeing became, said,
sih thera.GEN dati.GEN noh tho baz
himself of.the deed still/even there better
biknati.SUBJ.PAST.3.SG.
appraise.
'They then requested of the man who gained eyesight to
appraise/evaluate his action still/even there more thoroughly.'
(1.OG2.OtfEbKell.202.105)

The context for (41) is a story of Jesus giving a blind man eyesight. The miracle was worked on a Sabbath, which is the reason for public outcry. The formerly blind man is being questioned by the people and by the local high council about the events and about his opinion of Jesus – for the third time in (41). The criticism Jesus faces is rooted not only in breaking Sabbath but more importantly that he claims to be god's son, which, in turn, allowed him to do as he wished on a Sabbath.

This sentence is ambiguous for a temporal and a comparative reading. Both, the PSPs for the temporal and the comparative interpretations are satisfied in the context. The preceding context features two instances of the formerly blind man stating his opinion of Jesus. Moreover, there is a (locative/temporal cf. e.g.

(Petrova 2011)) particle adjacent to *noh*. The comparative interpretation is supported by the fact, that the man has stated his opinion of Jesus twice before and, moreover, the statements regarding Jesus have changed in degree ('to the better') – in the eye of the public: At first, the man called Jesus 'the savior'; at the second time, he called him 'a friend of god … a divine prophet'. Thus, he lessened the degree to which Jesus was stated to be akin to god. Another argument for a comparative interpretation is that, arguably, the finite verb *biknati* (*biknaen*, 'to confess, appraise, declare') is an atelic verb ('hold a belief/attitude') rather than an accomplishment ('declare your attitude/make a statement'). The lack of a direct (accusative) object would support that view. In conclusion, I argue that the comparative interpretation is salient.

As noted, (42) is ambiguous for a temporal and a comparative reading:

(42) Thar uuarun mit githuinge thie iungoron noh tho inne, sie scolta
There were with violence the apostles still there inside, they should
ruaren NOH tho mer thaz selba uuoroltlicha ser.
move still/even there more the same earthly suffering.
'The apostles were still inside with violence, they should continue to move/stir the earthly suffering.'
(1.OG2.OtfEbKell.351.12)

The example in (42) is set in the context of an allegory with the apostles fishing on – and Jesus on the shores of – the lake Sea of Galilee. The story states that Jesus is not with the apostles anymore and they now have to continue their work without him. Thus, they are situated in the rough waters of the lake (=out in the world) whereas Jesus is on the calm and dry shore (=dead; in heaven). (42) is ambiguous for a temporal and comparative reading. I will discuss it in more detail in the following section.

The following bits of data can be straightforwardly interpreted as comparative uses of *noch*. They all date from the OG3 period, indicating that during this time (950-1050) the comparative reading of *noh* is available.

(43) Úbe árg uuéllen uuêlih íst, árg kemúgen, dáz íst nóh
if evil.ACC to.want bad is, evil be.able.to.do, that is still/even
uuêlichera.
worse.
'If it is bad to want evil things, then to be able to do evil things is still/even worse.'
(Notker.Boeth-DeConPhil.III.201)

(43) is unambiguously comparative. There is no temporal sequence available and there is no temporal particle adjacent to *noh*. In the comparative interpretation, the comparison base (wanting evil) is in the same token. Similarly, there is no temporal sequence discernible in (44):

(44) Ér íst tero góto chúnnigosto . nóh tánne bíst tû
He is of.the gods most.knowledgeable. Still/even then/there are you
chúnnigora . uuánda ratio gemág mêr dánne
more.knowledgeable, because reason can.do more than
sermo .
the.conversation.
'He is the most knowledgeable about the gods. But you are still/even more knowledgeable because reason can achieve more than conversation.'
(1.OG3.N:Mart.Cap.II.111-121.J)

There is no temporal sequence that would support a temporal interpretation. While it is odd that the first clause has the superlative form of the adjective *chunnig* ('knowledgeable'), the Latin gloss does not feature superlative, and I assume that the superlative in the OG version is there for rhetorical reasons. The comparative reading is salient – in both the Latin and the OG versions. In (45) (from OG3) the *noh* is adjacent to *mêrun* ('more'), there is no temporal sequence and (45) can unambiguously be interpreted as comparative:

(45) Michel ist íro guôllichi an dînemo haltâre christo. [Lat.] Ímo selbemo
Great is her glory in your savior christ. [Lat.] him self
gíbest du noh mêrun guôllichi. unde mêrun zîereda. sô dû
give you still/even more glory. and more adornment. as you
in gesezzest ad dexteram tuam.
him set to_LAT right_LAT your_LAT.
'Great is the glory of the church in your savior christ. You give him still/even more glory and more adornment by setting him at your right side.'
(1.OG3.N:Ps:20.61-63)

The major conclusions to be drawn from the data (Table 9) are (i) that the comparative reading of *noch* developed within the OG period and (ii) that the (unambiguously identifiable) additive reading became available alongside the comparative reading. Umbach (2009a) stresses that $noch_{comp}$ shares a number of properties with $noch_{add}$, i.e. "patterns with the additive reading of *noch*" (Umbach 2009a:

p.9). Moreover, while Beck does not state so, her (2016a) analyses of the continuative, the subconstituent reading, and the further-to reading of *noch*$_{\text{temp}}$ seem a convincing trajectory from a 'standard' continuative reading towards an additive reading. Both, Umbach's (2009a) and Beck's (2016a) analyses and views combined make for a compelling argument to assume that *noch*$_{\text{comp}}$ developed based on *noch*$_{\text{add}}$. However, the mere observation that *noch*$_{\text{comp}}$ shares similarities with *noch*$_{\text{add}}$ does not justify the assumption that the former is derived from the latter – those similarities may well be due to the common origin in *noch*$_{\text{temp}}$. While the diachronic, empirical basis – despite considerable efforts – is admittedly rather weak, I argue that the early ambiguous cases (*noch*$_{\text{comp}}$ and *noch*$_{\text{temp}}$) should weigh more heavily. Both (41) and (42) and their contexts license a temporal reading (especially when excluding the comparative operator for the sake of contrasting the involved meaning components as minimal pairs introspectively). The fact that this ambiguity with a temporal interpretation exists among the earliest uses of comparative *noch* in those contexts leads me to propose an analysis of *noch*$_{\text{comp}}$ being derived from *noch*$_{\text{temp}}$ in the next section. With regard to example (40), as problematic as it is for the overall timeline I am suggesting, (40) could provide support for my proposal as a shift of scales (temporal to degrees): If (40) is indeed an instance of *noh*$_{\text{comp}}$, then (allowing to some degree for the innovativeness in Southern dialects of German) a process of reanalysis from *noch*$_{\text{add}}$ to *noch*$_{\text{comp}}$ is arguably even less likely the case.

7 Diachronic change – from *noch*$_{temp}$ to *noch*$_{comp}$

The comparative reading of *noch* is the direct offspring to the original temporal reading of *noch* through a process of reanalysis, from operating on a scale of times to a scale of degrees.

7.1 Stage 1 (pre-reanalysis)

Noh has a standard temporal reading of *noch*. There is the presupposition of t* (a free variable to be bound by context and left-abutting reference time) and a predicate P (a property of times, type <i,t>, that holds of reference time t as per the assertion) holds for t*.

(46) ther heilant … uuas noh thanne in theru steti…
the savor … was still then in the place…
'The savior was still in the place…' (1.OG1.TatianEvHarm.135.18)

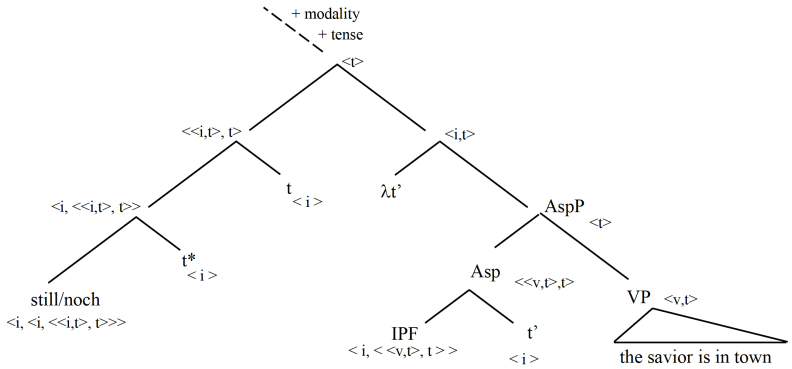


Figure 4: LF for (46); cf. (Beck 2016a)

7.2 Stage 2

Let's turn back to example (47) (= (42), above) for the following discussion:

(47) Thar uuarun mit githuinge thie iungoron noh tho inne, sie scolta
There were with violence the apostles still there inside, they should
ruaren NOH tho mer thaz selba uuoroltlicha ser.
move still/even there more the same earthly suffering.
'The apostles were still inside with violence, they should continue to move/stir the earthly suffering.'
(1.OG2.OtfEbKell.351.12)

The *noh* in sentence (47) is ambiguous for a temporal and a comparative interpretation. When excluding the comparative operator *mer* ('more') from the interpretation, the temporal continuative interpretation arises with the predicate ('*They move/stir the earthly suffering*') being true at reference time and a presupposed earlier time (which can be inferred from the context and is overtly satisfied in previous chapters of the stories – albeit not necessarily in the words of the allegory). In this regard, this is a perfect example since the entire allegory is about the contrast between the earlier time (when Jesus was with the apostles) and the later (reference) time (when Jesus has left the apostles).

The comparative operator in example (47) has the effect of comparing the maximum of a property of degrees (subject of comparison/comparee term) to another

maximum of a property of degrees (object/comparison base) – both of type <d,t> – with the standard term of comparison being temporally located before reference time.[10] The two different points in time are provided by the context since the *than*-clause is covert.

The temporal reading of *noh* puts a condition on the context that at an earlier, presupposed time t* 'the apostles move the earthly suffering' and it asserts that 'the apostles move the earthly suffering' at reference time t, cf. LF in Figure 5 (cf. also Beck 2016a). With the comparative operator having scope over the entire structure, the assertion has to be something like 'the apostles move the earthly suffering more than at an earlier time'. Thus, there is a conflict: On the one hand, the temporal *noch* requires a predicate to be true at an earlier time and at reference time and, on the other hand, the comparative requires that the predicate for reference time and an earlier time differs with regard to degrees.

This type of context represents a critical context, i.e. there is an ambiguity and at the same time one reading fits the context better than the other. In Eckardt's (2011) words, this constitutes a bridging context. In her discussion on reanalysis, she mentions 'precarious uses' and notes that the criteria for what constitutes a precarious use are manifold – among other things, they "can challenge the hearer by pragmatic infelicities" (Eckardt 2011: 44).

7.3 Stage 3

The time interval at reference time becomes reanalyzed as the interval of degrees to which the comparee term and the comparison base differ. As a consequence, the presupposed left-abutting time t* (for which P(t*)=1) becomes reanalyzed as an interval of degrees (on the scale introduced in the matrix clause comparison) to which the comparison base and another, presupposed degree d* differ. The degree d* serves as the lower bound of this second interval of degrees. While $noch_{\text{temp}}$'s t* is placed at a temporal location lower and relative to reference time (t*<t), $noch_{\text{comp}}$'s presupposed d* is located lower on a scale of degrees relative to the standard term of comparison ($d^* < \max(D_{<d,t>})$). In other words, the interval t* presupposed by $noch_{\text{temp}}$ corresponds to the interval of degrees presupposed by $noch_{\text{comp}}$, cf. below, (48), and Figure 6 for the post-reanalysis LF. The time variable for reference time is interpreted together with the matrix clause, i.e. in the LF below the comparison, as tense. This is necessary since the *than*-clause

[10] I assume gradable predicates here via a degree argument slot in an adverbial phrase, cf. (5). I will not go into details as to whether or not (certain) verbs have a degree argument slot or where the degree argument is originating from; for discussion see Piñón (2008), Rett (2013), Kennedy & McNally (2005), Kennedy (2012) et al. and references therein.

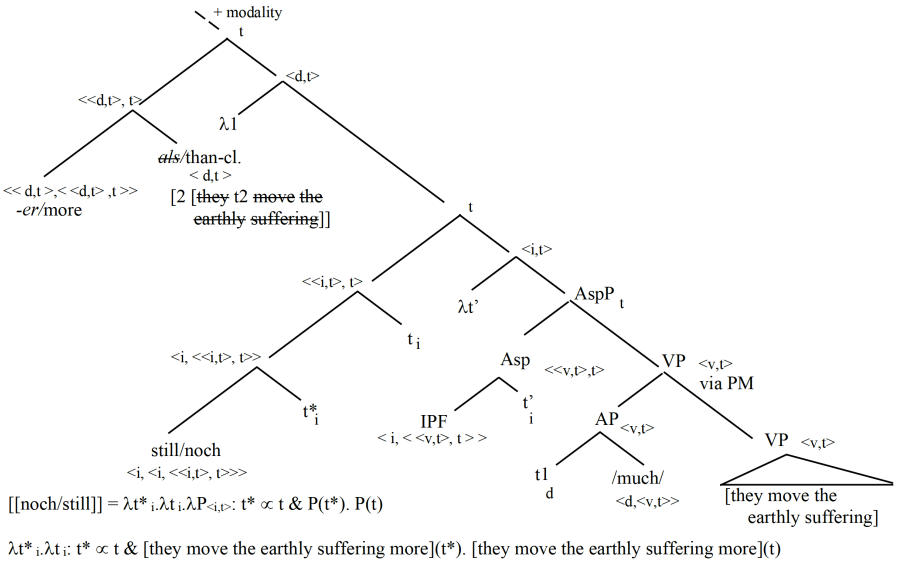
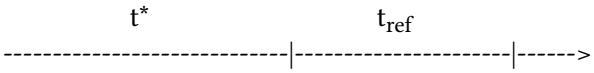


Figure 5: LF for $noch_{temp}$ for (47); cf. (Beck 2016a)

will have a different tense due to a different temporal location.[11] Thus, P(t) from the temporal interpretation corresponds to the property of degrees (at present tense) in (47) in the comparative interpretation. It may be argued that the task of pointing to an earlier time is taken over by the comparison which might facilitate for t* to be reanalyzed as the lower bound of another comparison, i.e. another difference in degrees.

(48) a.



(taken and adapted from Beck 2016a)

[11]Data like (i) suggests that aspect and tense need to be interpretable below comparison with both clauses having different tenses and aspect. See also (von Stechow 2006).

(i) *This time our guests are staying longer than they stayed last time.*

b. d* max(D1) max(D2)

----------°----------°----------°------>

ass.: |max(D1)<max(D2)|

PSP: |d*<max(D2)|

A question that has remained unaddressed is, what happens to the rather strong condition that the presupposed time left-abuts reference time (t* ∝ t). I argue that it remains intact in the sense that two areas of a scale of degrees are still ordered and adjacent, with the degree of the standard term of comparison being the marker at the boundary between the two different intervals.

Another argument that may be raised is that data like (47) say more about future times (times following reference time), rather than reference time or a preceding time t* and, therefore, an analysis of diachronic change should take e.g. Beck's (2016a) further-to analysis of *noch*$_{\text{temp}}$ as a starting point. Here I argue that only the fact that the comparative is present some speakers may get this 'forward-directedness'. If (47) did not feature a comparative operator, the continuative reading of *noch*$_{\text{temp}}$ would give the right predictions and be perfectly satisfied by the context.

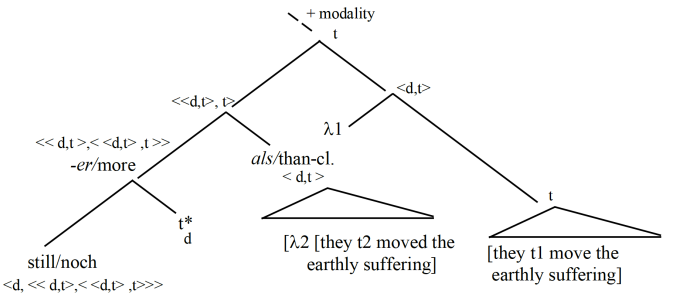


Figure 6: LF for *noch*$_{comp}$ for (47); cf. (Beck 2016a)

7.4 Stage 4

Unambiguous *noch*$_{\text{comp}}$ is available as early as OG3 (950-1050). The context for (49) is that God took Jesus to him when he died among the humans. After that the christian church/religion is endowed with glory (since Jesus has lifted all sins from the humans) and Jesus is also endowed with (even more) glory because he sits next to God for eternity. (49) does not license a temporal reading. As with the

previous example, there is an antecedent comparison where the degree to which the church has glory is compared to a standard degree of glory.

(49) Michel ist íro guôllichi an dînemo haltâre christo. [Lat.] Ímo selbemo
great is her glory in your savior christ [Lat.] him self
gíbest du noh mêrun guôllichi. unde mêrun zîereda. sô dû
give you still/even more glory. and more adornment. as you
in gesezzest ad dexteram tuam.
him set to_LAT right_LAT your_LAT.
'Great is the glory of the church in your savior christ. You give him still/even more glory and more adornment by setting him at your right side.'
(1.OG3.N:Ps:20.61-63)

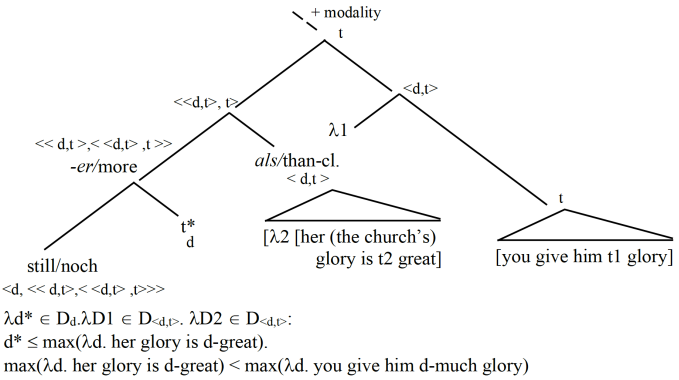


Figure 7: LF for (49); cf. (Beck 2016a)

In the OG3 subperiod, cf. (49), the comparative *noch*, in contrast to the earlier examples from OG2, the context does not necessarily allow a temporal reading any longer. The modern German interpretation of $noch_{\text{comp}}$ is fully available at that stage.

8 Conclusion

The above aims to contribute to the understanding of the semantics of $noch_{\text{comp}}$. I reported on an experiment investigating the PSP component of this use of *noch* and attempted to consolidate the findings with existing contributions to its semantics. Moreover, the experiment has informed the diachronic discussion of

noch$_{\text{comp}}$ in the sense that it provided direction for *noch*'s diachronic trajectory. For this trajectory, I have proposed a process of reanalysis for the comparative reading of *noch* as having developed from the temporal reading of *noch*. The above proposal is motivated by the ambiguity between temporal and comparative readings of the earliest examples comparative readings of *no(c)h* available. Despite the empirical evidence being rather limited, there are a number of aspects that support the above proposal. Many things need to further investigation, among others: The additive use of *noch* and its diachrony need detailed corpus based research in order to (i) better understand when and how it arose and (ii) its possible entanglement with the development of the comparative use of *noch*. Beck's (2016a) discussion of a variety of temporal readings leading up to additivity of *noch* provides a plausible diachronic trajectory for the development *noch*$_{\text{add}}$ which, in turn, (iii) requires a more thorough look at the data on *noch*$_{\text{temp}}$. Furthermore, *noch*$_{\text{comp}}$ needs investigating in later periods as well.

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Appendix

Table 10 contains all the condition-3-target items for all 16 token sets. For space constraints I can only include one condition. However, based on Tables 10 and 1 (p. 170) it is straight forward to reconstruct the remaining conditions as Table 11 exemplifies by means of the first toke set in line no. 01 in Table 10.

Table 10: Experimental design; condition-3-target items (fac **1**, lev **2** & fac **2**, lev **2**) for 16 token sets

no.	target item & and translation
01	Emil ist größer als Felix und Georg ist noch größer als Emil. Dabei ist Emil nicht groß. 'Emil is taller than Felix and George is still taller than Emil. And yet Emil is not tall.'
02	Sarah ist kleiner als Tina und Ulrike ist noch kleiner als Sarah. Dabei ist Sarah nicht klein. 'Sarah is shorter than Tina and Ulrike is still shorter than Sarah. And yet Sarah is not short.'
03	Die Birke ist höher als die Eiche und die Fichte ist noch höher als die Birke. Dabei ist die Birke nicht hoch. 'The birch tree is taller than than the oak tree and the spruce is still taller than the birch tree. *And yet the birch is not tall.'*
04	Die Goldmine ist tiefer als die Kupfermine und die Salzmine ist noch tiefer als die Goldmine. Dabei ist die Goldmine nicht tief.

no.	target item & and translation
	'The gold mine is deeper than the copper mine and the salt mine is still deeper than the gold mine. And yet the gold mine is not deep.'
05	Das Sofa ist breiter als der Tisch und das Regal ist noch breiter als das Sofa. Dabei ist das Sofa nicht breit. 'The sofa is wider than the table and the shelf is still wider than the sofa. And yet the sofa is not wide.'
06	Das Fenster ist schmaler als der Gang und die Türe ist noch schmaler als das Fenster. Dabei ist das Fenster nicht schmal. 'The window is narrower than the hallway and the door is still narrower than the winder. And yet the window is not narrow.'
07	Der Rhein ist länger als die Elbe und die Donau ist noch länger als der Rhein. Dabei ist der Rhein nicht lang. 'The Rhine is longer than the Elbe and the Danube is still longer than the Rhine. And yet the Rhine is not long.'
08	Das Kabel ist kürzer als der Draht und das Seil ist noch kürzer als das Kabel. Dabei ist das Kabel nicht kurz. 'The cord is shorter than the wire and the rope is still shorter than the cord. And yet the cord is not short.'
09	Doris ist schneller als Elsa und Flora ist noch schneller als Doris. Dabei ist Doris nicht schnell. 'Doris is faster than Elsa and Flora is still faster than Doris. And yet Doris is not fast.'
10	Oskar ist langsamer als Peter und Robert ist noch langsamer als Oskar. Dabei ist Oskar nicht langsam. 'Oscar is slower than Peter and Robert is still slower than Oscar. And yet Oscar is not slow.'
11	Konrad ist jünger als Lukas und Max ist noch jünger als Konrad. Dabei ist Konrad nicht jung. 'Conrad is younger than Lucas and Max is still younger than Conrad. And yet Conrad is not young.'

no.	target item & and translation
12	Gina ist älter als Hannah und Ilse ist noch älter als Gina. Dabei ist Gina nicht alt. 'Gina is older than Hannah and Ilse is still older than Gina. And yet Gina is not old.'
13	Das Buch ist besser als das Musical und der Film ist noch besser als das Buch. Dabei ist das Buch nicht gut. 'The book is better than the musical and the movie is still better than the book. And yet the book is not good.'
14	Das Buch ist schlechter als das Musical und der Film ist noch schlechter als das Buch. Dabei ist das Buch nicht schlecht. 'The book is worse than the musical and the movie is still worse than the book. And yet the book is not bad.'
15	Die 'Mona Lisa' ist schöner als 'Die Geburt der Venus' und 'Sternennacht' ist noch schöner als die 'Mona Lisa'. Dabei ist die 'Mona Lisa' nicht schön. 'The Mona Lisa is more beautiful than The Birth of Venus and The Starry Night is still more beautiful than The Mona Lisa.' 'And yet The Mona Lisa is not beautiful.'
16	Das T-Shirt ist hässlicher als die Jeans und der Pullover ist noch hässlicher als das T-Shirt. Dabei ist das T-Shirt nicht hässlich. 'The t-shirt is uglier than the jeans and the pullover is still uglier than the t-shirt. And yet the t-shirt is not ugly.'

The following shows the combinatorics behind the compilation of the questionnaires (A – H). The goal was to minimize response fatigue and reduce questionnaire duration. Therefore, I ended up with 8 questionnaires, each containing 8 target items and 16 fillers. The 64 target items were rotated/pseudo-randomized among the questionnaire groups, cf. Table 12, below. This was done to ensure that every participant had to rate 8 items while (i) never seeing any token set more than once, (ii) rating every condition twice, (iii) at least one item from every antonymous token set pair (i.e.: token set 1 – *tall* & token set 2 – *short*).

Table 11: example, 4 conditions per token set (fac **1**, lev **2** & fac **2**, lev **2**)

cond	fac 1	fac 2	item		
1	ass	+n	Emil ist groß 'Emil is tall	und Georg ist noch größer als Emil. and George is still taller than Emil.	Dabei ist Emil nicht groß. *And yet Emil is not tall.'*
2	ass	–n	Emil ist groß 'Emil is tall	und Georg ist größer als Emil. and George is taller than Emil.	Dabei ist Emil nicht groß. *And yet Emil is not tall.'*
3	com	+n	Emil ist größer als Felix 'Emil is taller than Felix	und Georg ist noch größer als Emil. and George is still taller than Emil.	Dabei ist Emil nicht groß. *And yet Emil is not tall.'*
4	com	–n	Emil ist größer als Felix 'Emil is taller than Felix	und Georg ist größer als Emil. and George is taller than Emil.	Dabei ist Emil nicht groß. *And yet Emil is not tall.'*

Table 12: Combination of token sets and conditions into questionnaires. quest. = questionnaire

item no.	token set	cond.	**quest.**	item no.	token set	cond.	**quest.**
1	1	1	*A*	33	9	1	*E*
2	1	2	*B*	34	9	2	*F*
3	1	3	*C*	35	9	3	*G*
4	1	4	*D*	36	9	4	*H*
5	2	1	*E*	37	10	1	**A**
6	2	2	*F*	38	10	2	**B**
7	2	3	*G*	39	10	3	**C**
8	2	4	*H*	40	10	4	**D**
9	3	1	*B*	41	11	1	*F*
10	3	2	*C*	42	11	2	*G*
11	3	3	*D*	43	11	3	*H*
12	3	4	*E*	44	11	4	**A**
13	4	1	*F*	45	12	1	**B**
14	4	2	*G*	46	12	2	**C**
15	4	3	*H*	47	12	3	**D**
16	4	4	**A**	48	12	4	**E**
17	5	1	*C*	49	13	1	*G*
18	5	2	*D*	50	13	2	*H*
19	5	3	*E*	51	13	3	**A**
20	5	4	*F*	52	13	4	**B**
21	6	1	*G*	53	14	1	**C**
22	6	2	*H*	54	14	2	**D**
23	6	3	**A**	55	14	3	**E**
24	6	4	**B**	56	14	4	**F**
25	7	1	*D*	57	15	1	*H*
26	7	2	*E*	58	15	2	**A**
27	7	3	*F*	59	15	3	**B**
28	7	4	*G*	60	15	4	**C**
29	8	1	*H*	61	16	1	**D**
30	8	2	**A**	62	16	2	**E**
31	8	3	**B**	63	16	3	**F**
32	8	4	**C**	64	16	4	**G**

Chapter 7

Givenness marking in a mixed system: Constituent order vs. determiners

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This paper investigates the interaction between constituent order and the use of determiners as means of marking givenness, understood here as a non-presuppositional existential inference that arises as a result of interpreting a predicate with respect to a context-specified situation, in light of (a version of) *New ≻ Given principle of Kučerová (2012). We attribute the principle to how situation binding operates in clauses, instead of postulating a presupposition-introducing operator and test it on new quantitative data from Medieval French, a system employing both determiners and constituent order for information structuring. Our results show that the constraint in question is respected across the board except for the cases when it is obviated by the presence of a morphological trigger of existential presupposition. We also show that a game-theoretic simulation incorporating this constraint matches very closely historical French data.

1 Introduction

This chapter focuses on the interactions between determiner types and constituent order in the marking of givenness in the history of French, on the basis of data from the twelfth to the seventeenth century. We understand givenness here in a weak sense of an existential inference that emerges when a nominal predicate is interpreted relative to a particular, discourse-specified situation. Medieval French is commonly assumed to have employed syntactic means for the expression of information structure. Because of the absence of native speaker judge-

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ments and speech recordings for historical data, identifying the exact information structural import of syntactic configurations no longer available in Modern French, such as the clause with a preverbal object in (1), is a complex task. However, the consensus states that the variable placement of arguments had mostly to do with the way their denotation related to the contextual information.

(1) Iceles miracles vit li pelerins
these miracles saw the pilgrim
"The pilgrim saw these miracles" (1210-BORON-PENN-P,32.441)

Marchello-Nizia (1995), who was among the first to investigate the tendency of Old French to have the verb immediately follow the first constituent (i.e. the so called V2-order, explored in a long series of works starting with Skårup (1975)), suggested that the first preverbal position was reserved for elements establishing a link with the previous discourse (for a similar intuition in Vennemann (1974) and Harris (1978)). Rinke & Meisel (2009: 117) argue that "the pre-verbal position correlates with a topic-interpretation and the post-verbal position with a non-topic interpretation". Kaiser & Zimmermann (2011: 24) propose that "the positioning of one or more non-subject constituents to the left of the finite verb in declarative root clauses directly correlates with their discourse status, i.e. with their interpretation as either topicalized or focalized constituents". They assume a split CP involving Topic and Focus projections. Based on an extensive corpus data analysis, Labelle & Hirschbühler (2018) conclude that although the distribution is not categorical, the initial constituent in V2 configurations tend to be topical. V2 with non-subject preverbal constituents progressively becomes more rare until the constituent order in declarative sentences effectively converges onto SVO.

At the same time, French already has *le*/*la*/*les* determiners, the frequency of which will increase over the course of history. These determiners have to be analysed as definiteness markers. The two series of phenomena, constituent order and determiners are closely related since both are crucially involved in structuring the propositional content with respect to the background information. More generally, definite, possessive, and demonstrative determiners are assumed in the Frege/Strawson tradition to function as existential presupposition triggers since their felicitous use requires the background to entail the existence of an individual or entity with certain properties. The English utterance in (2) where the subject DP is headed by a definite determiner is felicitous just in case the existence of a dog in some relevant domain is part of the participants shared

knowledge.[1]

(2) The dog is barking.

The increase in the frequency of definite determiners is closely followed by the increase in frequency of indefinite determiners, as discussed in Carlier (2013), which signal that a novel referent is being introduced and that a definite determiner could not have been used (Heim (1982), Heim (1991)).[2]

Conditions on the use of definite and indefinite determiners in English in some other languages partially correspond to the conditions on argument ordering. For instance, this is the case in Russian (Titov 2012). Consider 3–4, where a clause-initial argument is likely to be interpreted as denoting an entity whose existence is part of the background information, whereas a postverbal argument is likely to be interpreted as introducing a novel referent.

(3) Chlapec našel lízátko.
boy.Nom found lollipop.Acc
"The/a boy found a lollipop." #"A boy found this lollipop."

(4) Lízátko našel chlapec.
lollipop.Acc found boy.Nom
"A boy found this lollipop."

Kučerová (2012) argues that in Czech object scrambling is a means of aligning the syntactic structure with the (default) Given ≻ New order, where a constituent is considered as given if it has an antecedent in the preceding discourse and if the context entails the existence of an entity with the property denoted by this constituent. On this proposal, the two grammatical phenomena related to existential presupposition marking – syntactic and morphological (i.e. via pronominalization or a determiner) – can substitute for each other. The evolutionary trajectory of diachronic French data makes it an ideal test-case for this hypothesis since for several centuries the available texts feature both a very flexible and evidently information structure-driven constituent order *and* emerging definite determiners.

[1] Even in light of the analyses that deny the definite determiner an existential presupposition, such as Coppock & Beaver (2015), as will be discussed below, it is enough for our purposes that in most cases they give rise to an existential inference as a result of the nominal predicate being interpreted with respect to a contextually provided situation.

[2] Simonenko & Carlier (under review) give quantitative data on the changes in the determiner system in French over the course of time.

We will claim that medieval French data corroborate (an amended version of) Kučerova's (2012) model which predicts the infelicity of *New ≻ Given order within a propositional domain. We will show that all bare noun configurations involve Given ≻ New sequence, and that determiners have an obviating effect on this principle in that New ≻ Given is possible if the second argument involves a presupposition-triggering determiner.

Based on this proposal, we build a game-theoretic simulation of the interpretation of a class of utterances and show that the results of the simulation are almost identical to the empirically observed picture in historical French.

We also show that the *New ≻ Given makes a correct prediction with regard to the relative frequencies of different constituent orders. Finally, we use determiner distribution patterns to identify the information structural import of the OVS order, the only non-marginal configuration involving O ≻ S. We show that objects in OVS occur exceptionally frequently with demonstratives, which we analyse as signalling their status as shifted topics. Our quantitative analysis is based on the treebanks MCVF and Penn Supplement to MCVF.[3]

In the next section we discuss Kučerova's model, propose an amendment and lay out the predictions the amended model makes for the historical French data. In Section 3 we show these predictions to be borne out. Section 4 presents our Rational Speech Act model-based simulations and compares its predictions to the historical French data. In Section 5 we discuss the explanatory potential of our model of givenness marking for the constituent order frequencies. Section 6 concludes.

2 Marking givenness

Using Modern Czech as an empirical base, Kučerová (2012) formulates the information flow principle in (5), which states that a constituent interpreted as conveying new information cannot precede a constituent interpreted as conveying given information.

(5) Generalization *New ≻ Given
Within a domain [$_{\text{Dom}}$ Y … X], if X is given, so is Y. Kučerová (2012: 14)

The generalization captures the range of possible interpretations for utterances in terms of the sequences of new and given information. For instance, for (??),

[3] MCVF and Penn Supplement to MCVF with about 1,5 million words is the largest treebank for French diachrony to date.

it captures the unavailability of the interpretation whereby *chlapec* ("boy") is interpreted as new and *lízátko* ("lillipop") as given. It also captures the fact that if *lízátko* ("lillipop") is made to precede *chlapec* ("boy"), the given interpretation becomes available for the former, as (4) shows.

Kučerová (2012: 18) assumes the notion of givenness as spelled out by Schwarzschild (1999: 151), as in (6).[4]

(6) An utterance U counts as Given iff it has a salient antecedent A and

a. if U's type is e, then A and U corefer;

b. otherwise, modulo ∃-type shifting, A entails the Existential F-closure of U.[5]

Kučerová (2012: 14) derives this generalisation from the mechanism of givenness marking in natural language. Specifically, she proposes that a givenness presupposition can be triggered by a syncategorematic G(ivenness) operator that can be applied anywhere in a propositional domain, dividing the domain into given (higher) and new (lower) parts, as illustrated in Figure 1 from Kučerová (2012: 3).[6]

Kučerová (2012) also assumes that the insertion of such an operator is necessary if the presupposition is satisfied in a given context and if there are no morphological means of marking it in the numeration (in the Minimalist sense). The latter part is based on the Maximize Presupposition! principle of Heim (1991) supplemented with an assumption that the competition takes places between structures generated from the same numeration.

The predicted infelicity of New ≻ Given sequences corresponds to a presupposition failure since the operator G has the effect that all constituents to its left carry a givenness presupposition. One consequence of this proposal is that configurations where new material linearly precedes old in a given domain are only felicitous if the given material is morphologically marked as such. Kučerová (2012) assumes that once the givenness presupposition is morphologically marked, the G operator is not inserted. Morphological triggers of givenness presupposition involve proper nouns and personal pronouns.

[4] Kučerová (2012: 18) notes that she follows Sauerland 2005 in assuming that "givenness gives rise to an existential presupposition", without spelling out the details".

[5] Existential F-closure involves replacing focused expression by existentially closed variables.

[6] For the technical details of the recursive application of the G-operator which introduces restrictions on arguments' domains we refer the reader to Kučerová (2012) and (in even greater detail) Šimík & Wierzba (2015).

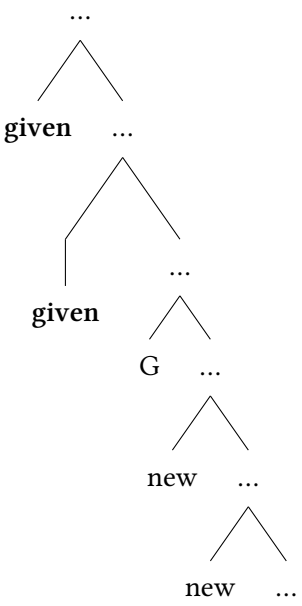

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Figure 1: Partitioning of a clause by the Givenness operator

Based on experimental results for Czech, Šimík & Wierzba (2015) replace the *New ≻ Given principle with a *Non-presupposed ≻ Presupposed contraint. They note, however, that the constraint is not absolute in that its violation does not result in the same degree of infelicity as the use of *a* instead of *the* in English in a context suitable for the latter.

We build on this version, proposing that the relevant notion is existential non-presuppositional inference rather than a hard presupposition and that its violation causes a downstep in acceptability rather than strong infelicity. We also add to it an obviation condition that morphological triggers of existential presupposition, such as personal pronouns, proper names, demonstrative, definite, and possessive determiners, are exempt from the constraint. In addition to arguments that involve morphological markers of existential presupposition, we note that an argument can be exempt from existential opposition altogether, as in the case of bare nouns forming complex predicates with finite verbs. We assume that this

applies to idiomatic expressions or light verb constructions such as *avoir nom* ("to be called"), *avoir peur* ("to be afraid"), *avoir cure* ("to need"), *faire mal* ("to hurt"), where the bare noun cannot be interpreted as a referential expression. An example of such construction is given in (7).

(7) out num_{obj} cil_{sbj} Nabal
had name this Nabal
"this (man) was called Nabal" (1150-QUATRELIVRE-PENN-P,49.1841)

An amended version of the constraint is given in (8) where the relevant notion of givenness is defined as in (9).

(8) Generalisation #New ≻ Given
Within a domain $[_{Dom}$ Y … X], if X is given, so is Y
unless X involves a morphological trigger of existential presupposition
or unless the non-presupposed/presupposed opposition does not apply to one of the arguments,

(9) A constituent *C* of an utterance *u* in a context *c* (in Stalnaker's sense) interpreted with respect to a situation *s* is considered given if *c* entails the non-emptiness of the extension of *C* in *s*.

Instead of Kučerova's syncategorematic introducer of domain restrictions (i.e. presupposition trigger) G, we assume that the relevant operator is a situation binder $\sum_G$, which binds situation variables of predicates to a topic situation down to a point where there is another binder. That is, $\sum_G$ binds all unbound situation variables. Following Kratzer (2017) and Schwarz (2009: 127–133), we assume that topic situations can be derived from Questions Under Discussion (Roberts (1996), Büring (2003)). Specifically, a topic situation is a minimal situation that exemplifies the set of situations in which the answers to QUD are the same as in the actual world.[7]

The relevant existential inference, which constitutes the content of givenness on our account, is an inference that the extensions of predicates interpreted relative to a topic situation are non-empty. The inference arises because the topic situation is a situation whose contents are likely known to the speech act participants. That the relevant existential inference in question is non-presuppositional

[7]Definitions of exemplification and minimality from Kratzer (2017): A situation *s* exemplifies a proposition *p* iff whenever there is a part of *s* in which *p* is not true, then *s* is a minimal situation in which *p* is true. A situation is a minimal situation in which a proposition *p* is true iff it has no proper parts in which *p* is true.

on our account matches the conclusion reached in Šimík & Wierzba (2015) that their *Non-presupposed ≻ Presupposed constraint is relatively mild. If we assume that interpreting a predicate relative to a topic situation gives rise to an existential inference because the speech act participants expect the contents of the topic situation to be known, the inference is cancellable to the extent that this expectation can prove wrong, that is, that in some cases a topic situation does involve entities whose existence is not part of the common ground.

In the absence of any other sources of values for situation variables, this derives, in particular, the #NP1$_{New}$ ≻ NP2$_{Given}$ constraint, since if the situation argument of NP2 is bound, that of NP1 is bound as well (and is therefore interpreted relative to the topic situation, giving rise to an existential inference), just because the binding operators in an across-the-board fashion from top to bottom.

With regard to the rationale behind the obviation conditions, the presence of a determiner introducing its own resource situation pronoun and triggering existential presupposition relative to that situation (as, we assume, possessive, demonstrative, and definite determiners do) makes $\sum_G$ qua the binding mechanism unnecessary (although the determiner's situation pronoun may co-refer with the topic situation, cf. Schwarz (2009)). As a result, a noun phrase interpreted with respect to some other situation may precede a noun phase with a presupposition-triggering determiner. This is illustrated in figure (2) where s_{topic} is a topic situation pronoun, s_r is a resource situation pronoun associated with a determiner, -s stands for a situation argument of a nominal predicate, and $\sum_G$ is the situation binder in question. In this configuration, the two upper NPs are interpreted with respect to the topic situation, whereas the situation argument of the lowest NP is valued by a separate resource situation introduced by a determiner.

2.1 Morphological triggers of existential presupposition

We assume the Logical Forms of demonstrative, definite, and possessive determiners involve a resource situation pronoun which "stops" the binding triggered by $\sum_G$. The LFs and lexical entries for definite and demonstrative determiners are based on Heim (2011), Elbourne (2008), and Schwarz (2009). The entry for possessives is based on Simonenko & Carlier (2019). All these are given in (10)–(15) for the sake of concreteness.

(10) LF of a definite determiner: [[D_{def} s_r] NP]

(11) $[\![D_{def}]\!] = \lambda s_\sigma.\ \lambda P_{<e,\sigma t>} : \exists x \forall y[Max(P)(y)(s) \longrightarrow x = y]\ .\ \iota x[Max(P)(x)(s)]$,

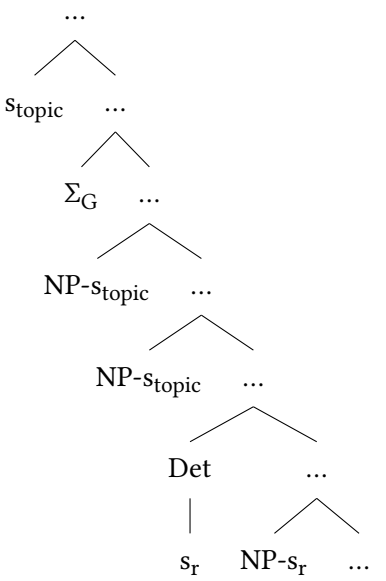

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Figure 2: Givenness operator as a situation binder

where Max(P) = $\lambda x_e . \lambda s_\sigma$. P(x)(s) & $\neg\exists$y[P(y)(s) & x < y]

(12) LF of a demonstrative determiner: [i [[D_{dem} s_r] NP]],
where i is the index of a silent individual pronoun

(13) $[\![D_{dem}]\!]$ = $\lambda s_\sigma . \lambda P_{<e,\sigma t>} . \lambda y_e$: $\exists$x[P(x)(s) & x = y] . ιx[P(x)(s) & x = y]

(14) LF of a possessive determiner: [i_{poss} [[D_{poss} s_r] NP]],
where i is the index of a silent individual pronoun

(15) $[\![D_{poss}]\!]^{c,g}$ = $\lambda s_\sigma . \lambda P_{<e,\sigma t>} . \lambda y$:
$\exists!$x[λs_σ . λy_e . λz_e . z belongs to y in c & P(x) in s)(s)(y)(x)] .
ιx.Max(λs_σ . λy_e . λz_e . z belongs to y in c & P(y) in s)(s)(y)(x)

Because of the existential presupposition they involve, these entries, if used in a felicitous sentence, give rise to an existential inference. The resource pronoun

in their logical forms, in the absence of external binders, does not propagate its value beyond the local DP, which predicts the felicity of $NP1_{New} \succ NP2_{Given}$ if the existential inference results from the use of a determiner. In particular, it correctly predicts the felicity of the Czech example in (16), from Kučerová (2012).

(16) Chlapec našel **ten** lízátko.
boy.Nom found this lollipop.Acc
"A boy found this lollipop."

2.2 Predictions

With respect to its constituent order flexibility, Old French is more similar to Modern Slavic languages than to Modern French. For instance, a transitive clause with a nominal subject and object can have any of the 6 possible constituent orders: SOV, SVO, VSO, OSV, OVS, VOS. Relative frequencies of different orders are given in Table 3.

The counts in the table, which we extracted from MCVF (2010) and Penn Supplement to MCVF (Kroch & Santorini 2010), include all finite transitive clauses with nominal subjects and objects.[8] We excluded all cases of pronominalization, first, because of their often restricted syntactic distribution in comparison with nominal arguments and, second, because pronouns either trigger existential presupposition or are explicitly incompatible with it and therefore will not help us evaluate the #New ≻ Given principle.

Table 1: Constituent order in transitive clauses

	OSV	OVS	SOV	SVO	VOS	VSO
XI c.	0.02 (2)	0.13 (17)	0.14 (18)	0.62 (83)	0.02 (3)	0.05 (6)
XII c	0.01 (27)	0.11 (203)	0.12 (219)	0.61 (1120)	0.05 (95)	0.09 (173)
XIII c.	0.00 (3)	0.04 (23)	0.02 (13)	0.77 (493)	0.02 (15)	0.15 (97)
XIV c.	0.00 (3)	0.03 (37)	0.03 (37)	0.73 (1043)	0.03 (47)	0.18 (255)
XV c.	0.00 (0)	0.02 (11)	0.01 (8)	0.88 (615)	0.02 (13)	0.07 (52)
XVI c.	0.00 (0)	0.02 (5)	0.00 (0)	0.91 (286)	0.02 (6)	0.06 (18)

We are specifically interested in the orderings between subjects and objects.

[8] The relevant corpora are described, in particular, in Martineau (2008) and in Simonenko et al. (2018).

Ignoring verbal position, we give relevant counts and relative frequencies in Table 2.

Table 2: Nominal argument order in transitive clauses

Period	OS	SO
XI c.	0.17 (22)	0.83 (107)
XII c.	0.18 (325)	0.82 (1512)
XIII c.	0.06 (41)	0.94 (603)
XIV c.	0.06 (87)	0.94 (1335)
XV c.	0.03 (24)	0.97 (675)
XVI c.	0.03 (11)	0.97 (304)

The conditional version of the #New ≻ Given principle in (8) makes a number of non-trivial predictions. Specifically, given a transitive clause with overt nominal subject and object, we expect to find the orders in (17) but not in (18), where DET stands for a morphological trigger of existential presupposition.

(17) Predicted licit patterns for sequences involving new and old material:

A1 (DET-)S_{given} O_{new}
A2 (DET-)O_{given} S_{new}
A3 S_{new} DET-O_{given} (obviated #New ≻ Given)
A4 O_{new} DET-S_{given} (obviated #New ≻ Given)

(18) Predicted illicit patterns for sequences involving new and old material:

B1 S_{new} O_{given}
B2 O_{new} S_{given}

3 Testing the predictions

In the previous section we outlined the predictions made by *New ≻ Given supplemented with a proviso about the obviating effect of morphological presupposition triggers or arguments to which new/given distinction does not apply, such as incorporated nominals. These predictions are testable in a corpus to the extent that it is representative and that we can approximate infelicity/ungrammaticality of a pattern by the absence thereof in a sufficiently large dataset. Assuming the #New ≻ Given principle, in historical French we expect not to find any patterns

where an argument denoting new information linearly precedes an argument denoting given information, unless the second argument features a morphological presupposition trigger or one of the arguments is exempt from new/given opposition. Below we report the results of querying for the licit and illicit configurations listed above.[9]

3.1 SO

We first check all the SO clauses which can potentially contain an illicit string B1, that is, finite clauses where both subject and object are bare nouns. There are 283 such clauses in the corpus. Examples (19)–(23) illustrate SO strings involving arguments without morphological triggers of existential presupposition.

(19) que pïeté$_S$ venqui paor$_O$.
that piety conquered fear
"that piety conquered fear."[10] A1

(20) Juvente bien endoctrinee$_S$ Aporte viellesce senee$_O$;
youth well instructed brings old.age wise
"Education in the young age brings wisdom in the old age;"[11] A1

(21) Si con malades$_S$ desirre santé$_O$
so as sick desires health
"so as a sick man desires health"[12] A1

(22) fiebles hums$_S$ dreit$_O$ mais ne conquestast
weak man justice never NEG would.win
"a weak man would never obtain justice"[13] A1

(23) CASTOR$_S$ en ceste vie Saint ume$_O$ signefie
beaver in this life saint man signifies
"The beaver signifies a saintly person in this life"[14] A1

[9] We considered transitive clauses with nominal arguments that are not preceded by any of the following: definite, demonstrative, indefinite, possessive or partitive determiner.
[10] (1155-ENEAS1-BFM-R,87.1898)
[11] (1183-ADGAR-BFM-R,265.3473)
[12] (1185-COBE-BFM-R,3.28)
[13] (1173-BECKET-BFM-R,74.2014)
[14] (1128-BESTIAIRE-BFM-R,43.564)

In the corpus we found no SO strings violating *New ≻ Given (i.e. pattern B1 in (18)).

On the basis of (19)–(23), one could argue that the absence of New ≻ Given sequences is an epiphenomenon of the sample involving bare nouns only. Namely, it is theoretically conceivable that in Medieval French all noun phrases without determiners either denote abstract notions (as in (19), (20)), receive kind interpretation (as in (23)) or are used in generic statements (as in (20) and (21)). We assume that these interpretations inherently involve an existential presupposition.[15] This means that SO strings involving only those cannot in principle feature New ≻ Given sequence and therefore such a sample cannot be used to evaluate the relevant predictions. However, although there are indeed many bare arguments involving abstract, kind denoting, and generic NPs, there are also cases of SO with bare arguments denoting individuals, as (24)–(26) illustrate.

In (24) the subject *Osbercs e helmes* ('hauberks and helmets') is part of the given information, that is, the context entails that the exists individual with the relevant properties in a prominent situation.

(24) Osbercs e helmes$_S$ i getent grant flabur$_O$
hauberks and helmets there throw.off great flames
"hauberks and helmets throw off great flames"[16] A1

In (25) the subject is a specific indefinite (the narrator is talking here about Saint Mary who restores humanity to life through Jesus Christ and who is about to Eve, who brings death through sin), and the object is arguably indefinite as well (to be understood as 'a new life').

(25) Fame$_S$ vie$_O$ nous restora
woman life to.us restores
"a woman restored us to life"[17] A1

Example 26 speaks about Christians in some prominent situation.

[15] We assume that generic statements involve an implicit quantifier over situations coupled with a presupposition of the non-emptyness of its domain, that is, that there exit situations accessible from the evaluation situation in which there are individuals with the nominal property (Lee (1995), von Fintel (1996)).

[16] (1100-ROLAND-V,137.1820)

[17] (1190-BORON-PENN-R,27.431)

(26) De vus unt crestiens$_S$ cumfort$_O$.
from you have Christians comfort
"Christians receive comfort from you."[18] A1

Examples in (27)–(30) are cases of obviation where the presence of a morphological presupposition trigger arguably obviates the #New ≻ Given principle, as predicted in (17).

(27) é rasur$_S$ ne li munterad **le** chief$_O$
and razor not him mounted DET head
"and a razor did not touch his head"[19] A3

(28) grans multitudene d' angeles$_S$ recurent **l'** anrme$_O$
great multitude of angels received DET soul
"a great multitude of angels received the soul"[20] A3

(29) .VII. milie graisles$_S$ i sunent la menee$_O$
seven tusand bugles there sound DET charge
"seven thousand bugles sound the charge"[21] A3

(30) Si passerent toutes gens d' armes et aultres$_S$ **la** grose riviere de la
so passed all people of army and others DET big river of DET
Geronde$_O$
Geronde
"so all the army and others passed the great river of Geronde"[22] A3

3.2 OS

There are 37 finite clauses with OS order where both subject and object are nouns without determiners (but possibly with quantifiers or modifiers) in the corpus we used. A configuration involving Object ≻ Subject violates *New ≻ Given if the Object is new and Subject is given. The example in (35) may look like a potential violation of #New ≻ Given as the object *duel* 'sorrow' precedes a clearly given subject *pere et mere* 'father and mother'.

[18] (1183-ADGAR-BFM-R,181.1981)
[19] (1150-QUATRELIVRE-PENN-P,5.47)
[20] (ID 1200-SERMMADN-BFM-P,18.136)
[21] (ID 1100-ROLAND-V,112.1445)
[22] (1376-FROISSART-7-P,763.1956)

(31) n' ert mervoille se duel$_O$ menoient pere et mere$_S$
not was miracle if mourning led father and mother
"it was not surprising if father and mother were mourning"[23] A2

However, *duel* is mentioned just a couple clauses before and, hence, cannot be considered as a evoking a new referent. The relevant clause is given in (36).

(32) duel$_O$ ot li rois$_S$ quant il la voit
mourning had DET king when he her saw
"the king started mourning when he saw it"[24] A2

Like *avoir faim* ("to be hungry", literally, "to have hunger"), *avoir deuil* ('to suffer') is a light verb construction combining a copula and a noun that denotes an event or a state. We assume that for these cases the notion of givenness or existential presupposition is undefined and, consequently, the principle does not apply.

Another example of OS with bare arguments is given in (37), where both NPs are given.

(33) Force de deïté$_O$ Demustre piz quaré$_S$
force of divinity shows forequarters
"The forequarters (of a lion) symbolize the divine power."[25] A2

We find the same configuration in (34), where the denotations of both the subject and the object belong to the given information since the relevant passage describes an army being set in motion.

(34) E destendent acubes$_O$ serjant e escuier$_S$.
and take.down tentes sergeants and esquires
"And the sergeants and esquires take down the tents."[26]

The #New ≻ Given principle predicts an obviation for OS strings where a new object precedes a given subject with a presuppositional determiner (pattern A4 in (17)). This case is illustrated by in (35)–(37).

[23] (1155-ENEAS2-BFM-R,12.199)
[24] (ID 1155-ENEAS2-BFM-R,12.197))
[25] (1128-BESTIAIRE-BFM-R,3.31)
[26] (1175-FANTOSME-BFM-R,48.514)

(35) Mult grant venjance$_O$ en prendrat **l'** emperere$_S$.
very big revenge of.it will.take DET emperor
"The emperor will take a great revenge of it."[27] A4

(36) Granz curs$_O$ unt fait **li** pelerin$_S$,
big journey have done DET pilgrims
"The pilgrims have done a big journey,"[28] A4

(37) Onbre$_O$ li fet **li** plus biax arbres$_S$ c' onques poïst former
shadow him did DET most beautiful tree that ever could form
Nature.
nature
"That most beautiful tree that that the Nature coud form gave him
shadow."[29] A4

As an interim conclusion, in a transitive clauses with bare arguments we found no cases violating #New ≻ Given (with obviation conditions), that is, involving an argument associated with given information following an argument not associated with given information. These results are to be only taken as suggestive since the absence of a pattern in a limited sample cannot be straightforwardly interpreted as signalling ungrammaticality. However, the fact that among 320 clauses with bare arguments there are no instances violating #New ≻ Given is likely not a matter of chance. That is, we found no patterns B1 and B2. To test this, we compared the number New ≻ Given information states among SO with bare argument with the number of such information states among SO strings where the object has a morphological presupposition trigger (which makes them exempt from the #New ≻ Given constraint). As Table 3 shows, there are 69 instances of such information state, which means that a non-given constituent preceding a given one is not a very rare information state in general.

4 Simulating a mixed system: Rational Speech Act model

The Information Flow principle in (8) relates constituent order and morphological existential presupposition triggers as alternative markers of givenness in a type of a tradeoff relation. If a determiner is used, then the order of NPs does not

[27] (1100-ROLAND-V,112.1449)
[28] (1120-BRENDAN-R,59.776)
[29] (1170-YVAIN-R,12.383)

Table 3: Rate of New ≻ Given in finite clauses

	SO	S def/dem O
New ≻ Given	0	69
Other (New ≻ New, Given ≻ New, Given ≻ Given)	283	79

matter for new/given encoding, and, conversely, if NPs meant to be interpreted as given precede NPs meant to be interpreted as new, determiners need not be used.

In terms of how they convey information structure, however, syntactic and morphological are not equivalent in so far as a constituent order NP_1 NP_2, incompatible with New ≻ Given interpretation, is compatible with Given ≻ New, Given ≻ Given, and New ≻ New interpretations, whereas a sequence NP_1 DET NP_2 is compatible with fewer information states: New ≻ Given and Given ≻ Given. Assuming that language users are aware of this, we can try to simulate the use of the two types of markers in a mixed system and compare the results with the quantitative data from diachronic French.

To do the simulations we use Rational Speech Act model (RSA, Frank & Goodman (2012)). RSA assumes Bayesian reasoning on the part of the speech act participants. Specifically, the beliefs of the Speaker and Listener are represented as probabilities they associate with different states of affairs. Probabilities that the Listener has before an act of communication are called prior probabilities. An utterance used in an act of communication is considered to be data that allow the Listener to update their knowledge by inferring posterior probabilities of the states of affairs. Interpretation (or probability update) at the so called literal listener level, is based solely on the literal meaning of the utterances (a pre-set relation between utterances and states of affairs). Then at the so called pragmatic speaker level the model takes into account the properties of the literal listener and an assumption that the speaker wants to maximize their chances to be understood (for the listener to infer from the utterances the state of affairs that the speaker means). It is this level that we use in our model of interaction of constituent order and morphological presupposition triggers.

In our simulation, we assume the states of affairs as in Table 4 and possible utterances and correspondences between the two (literal meanings) as in Table 5.

We use DET here as a cover label for definite, demonstrative, possessive, and partitive determiners.

Table 4: States in RSA simulation

STATE	Given ≻ New	New ≻ Given	Given ≻ Given	New ≻ New

Table 5: Literal meaning: utterances and corresponding information states

UTTERANCE	INFORMATION STATE
"DET O DET S"	Given ≻ Given
"DET O S"	Given ≻ Given, Given ≻ New
"DET S DET O"	Given ≻ Given
"DET S O"	Given ≻ Given, Given ≻ New
"O S"	Given ≻ Given, Given ≻ New, New ≻ New
"S DET O"	Given ≻ Given, Given ≻ New, New ≻ New
"S O"	Given ≻ Given, Given ≻ New, New ≻ New

For the moment we assume that a priori all states of affairs and all utterances are equally likely. This means that, for instance, upon hearing "S O" a Literal Listener will end up with a uniform probability distribution over the states Given ≻ Given, Given ≻ New, and New ≻ New, as illustrated in Figure 3.

A Pragmatic Speaker model generates inferences about what constituent orders a speaker is likely to use in order to convey a certain target information state given the assumptions of the Literal Listener and with the goal of maximizing the chances for the target state to be recovered. Figures 4–6 illustrate the inferences of the Pragmatic Speaker with regard to the Given ≻ Given, Given ≻ New, and New ≻ New states, respectively. For instance, the model predicts that in order to convey Given ≻ Given a speaker is most likely to use the order "DET S DET O" or "DET O DET S". If we look again at Table 5, we will see that among all the seven configurations eligible to convey a given Given ≻ Given information flow, these two are the least ambiguous in that they are associated with only one information state.

The New ≻ Given state can only be conveyed by one configuration, S DET O (O DET S order is not attested in the corpus and therefore is not part of our model).

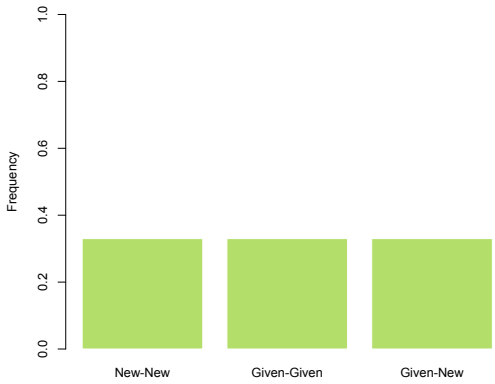

Figure 3: Literal Listener with uniform priors interpreting “S O”

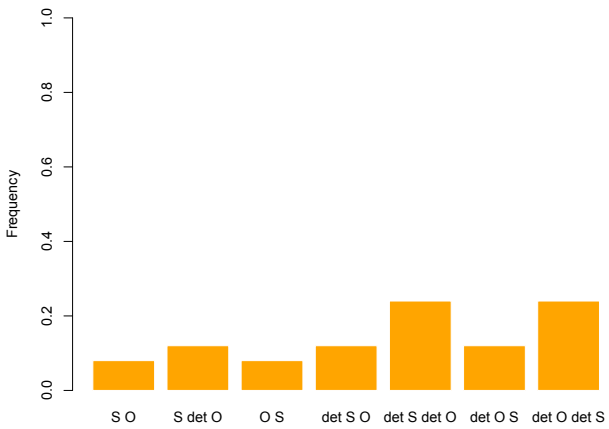

Figure 4: Pragmatic Speaker with uniform priors conveying Given ≻ Given

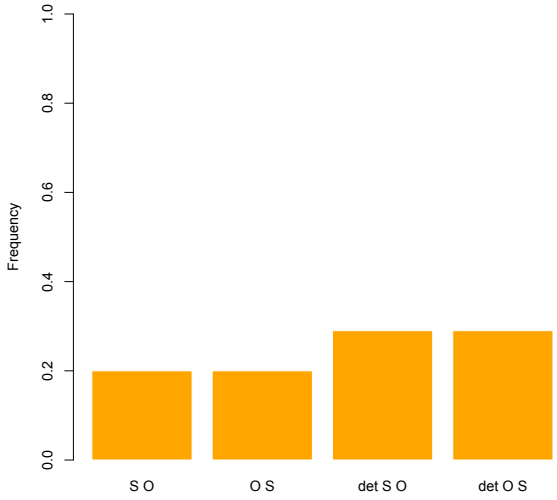

Figure 5: Pragmatic Speaker with uniform priors conveying Given ≻ New

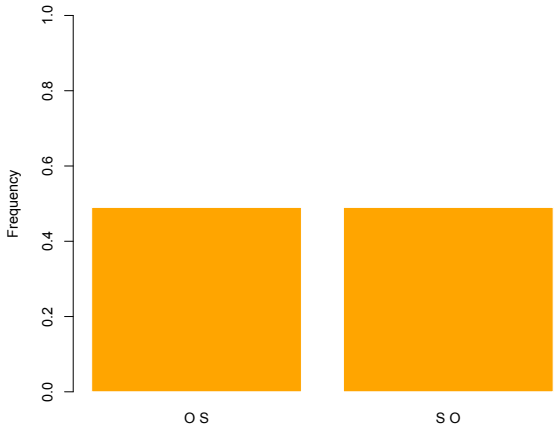

Figure 6: Pragmatic Speaker with uniform priors conveying New ≻ New

A model of a Pragmatic Listener involves inferences with respect to the performance of a Pragmatic Speaker. That is, given a particular constituent order, this model makes inferences about most likely interpretations. Inferences for the "S O" configuration are shown in Figure 7 .

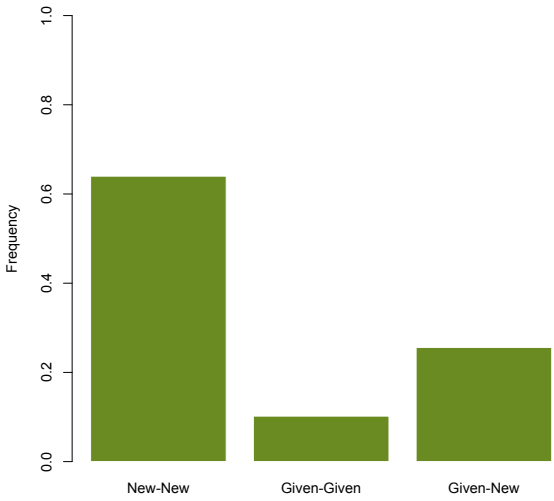

Figure 7: Pragmatic Listener with uniform priors interpreting "S O"

We see that a Pragmatic Listener model predicts that "S O" configuration is most likely interpreted as conveying a New ≻ New information state. As figures 4–6 show, to convey Given ≻ Given or Given ≻ New, there are better candidates than "S O", namely, "DET S DET O" or "DET O DET S" and "DET S O" or "DET O S", respectively. That the model predicts "S O" to be most likely interpreted as New ≻ New corresponds to our intuition that the listener expects the speaker to use "DET S DET O" or "DET O DET S" and "DET S O" or "DET O S" for conveying the two other possible states. Since the Speaker visibly did not use either of those, the most likely interpretation is New ≻ New, for which there is no better option than "S O".

Let us now see how the Pragmatic Listener model fares compared to the historical French data. We classified all bare noun "S O" configurations in the corpus as New ≻ New, New ≻ Given or Given ≻ New (recall that we did not find any bare noun "S O" corresponding to New ≻ Given information state). Figure 8 shows

the distribution of information states among “S O” sequences in the corpus.

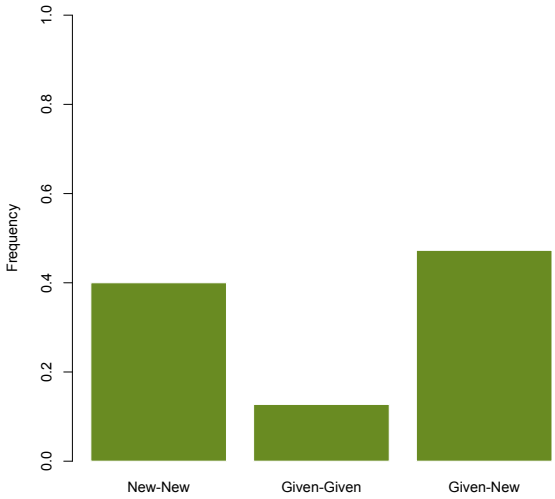

Figure 8: Distribution of informations states among “S O” in French, X-XVI c.

Comparing these results with the predictions of our RSA Pragmatic Listener model in Figure 7, we see that in the actual data the frequency of Given ≻ New is higher than predicted, while the frequency of New ≻ New is lower.

Now, in our model we assumed that apriori all information states are equally likely (they had uniform priors). This is, however, most likely not the case (see Birner (2012) for references). We therefore need to make our information state priors more realistic. In order to do that, we used data from a syntactically annotated subcorpus of the Russian National Corpus, *Russian National Corpus* (2019). We classified 430 Russian transitive sentences with bare (i.e. without demonstrative or possessive determiners) nominal arguments (both “S O” and “O S”) according to their information state. The obtained distribution is plotted in Figure 9.

We used these frequencies to set the priors for the information states in our RSA model. That is, instead of assuming that information states Given ≻ Given, Given ≻ New, New ≻ Given, and New ≻ New are equally likely, we set their probabilities to 0.35, 0.46, 0.02, and 0.16, respectively. We then reran our Pragmatic Listener model, which now generates inferences for interpreting “S O” configuration as in Figure 10, where it is plotted against the historical French data.

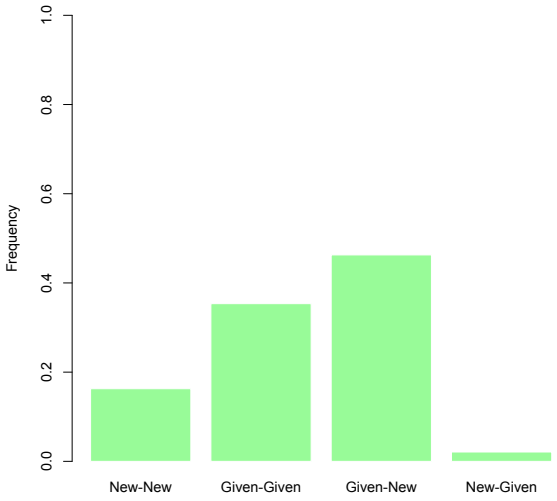

Figure 9: Distribution of informations states among transitive clauses with bare nominal arguments in the Russian National Corpus

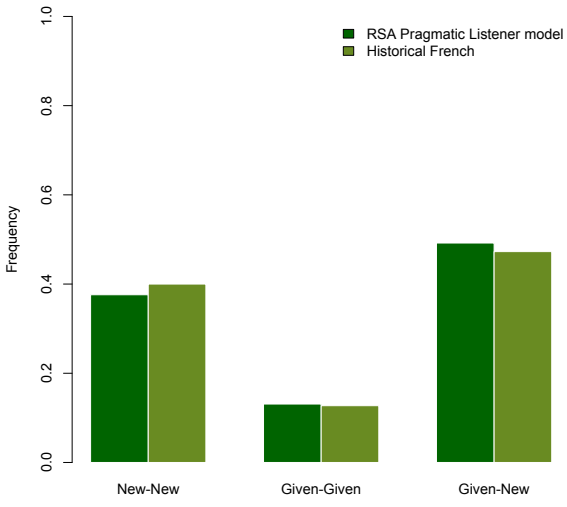

Figure 10: Distribution of informations states among "S O" as predicted by Pragmatic Listener model and in historical French corpus

As the figure shows, the shapes of the two distributions are remarkably similar, which means that our RSA Pragmatic Listener is a successful simulation of the pragmatic reasoning behind the historical French data.

The core assumptions of the simulation are encoded in the morphological entries in Table 5, where the strings with presupposition-triggering determiners are less ambiguous than strings with bare NPs only and where New ≻ Given information state cannot be conveyed by utterances involving bare nouns. This has the effect of predicting that, first, whenever there is a choice, speakers will be more likely to use strings with determiners than strings without, as this maximizes their chance to be understood (see figures 4 and 5), and, second, that pragmatically reasoning listeners will tend to interpret bare nouns as conveying information states which could not have been conveyed using presupposition-triggering determiners, such as New ≻ New (see Figure 7). The simulation results match historical French data very closely, while they contrast with the data we took from the Russian National Corpus where Given ≻ Given is the second frequent information state of a transitive clause with bare nouns (see Figure 9). We suggest that the differences is due precisely to the lack of definite determiners in Russian, which means that there is no better alternative for conveying Given ≻ Given than bare NPs, while in French "DET S DET O" is the best option (see Figure 4).

5 Givenness marking and constituent order frequencies

In this section, we explore a connection between givenness marking and constituent order frequencies in historical French. Let us take another look at the constituent order distribution in Table 3. Orders involving O ≻ S are markedly more rare than those with S ≻ O, with one exception, namely, the OVS configuration. First, we suggest that the rarity of O ≻ S in medieval French, and thus the rarity of OSV and VOS, is a consequence of #New ≻ Given on the assumption that subjects denote given information more frequently than objects. This assumption can be tested, at least at a first approximation, by looking at the distribution of determiners with subjects and objects. The rates of definite and possessive determiners and demonstratives with subjects and objects will be indicative of their respective tendencies to be associated with existential presupposition. Figure 11 shows the determiner distribution with subjects and objects per century.

Based on this approximation, we can estimate that during all periods subjects are at least 2–3 times more likely than objects to occur with a definite, possessive or demonstrative determiner, which indicates that subjects are much more

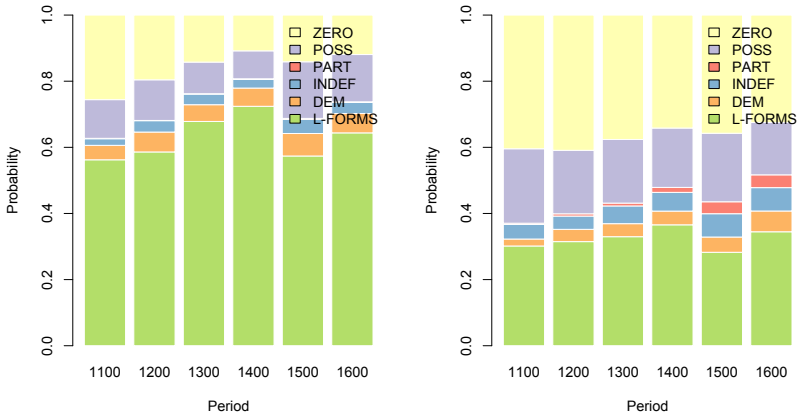

Figure 11: Determiner distribution: subjects vs. objects

likely to satisfy the conditions on the use of presupposition-triggering determiners, namely, to denote an individual whose existence is entailed by the Common Ground.

Extrapolating this conclusion onto clauses with bare arguments, we expect that subject noun phrases denote properties whose extension is entailed by the Common Ground to be non-empty much more frequently than objects. This, in turn, means that the order S ≻ O is expected to align with the (licit) information state Given ≻ New much more frequently than the order O ≻ S. We suggest that this is at least in part responsible for the very low frequency of OSV and VOS orders in historical French.[30]

We also observe that OVS order is more frequent than OSV and VOS. We suggest that OVS corresponds to a configuration of topic (situation) shift, where the preverbal position is associated with prosodic prominence. To probe into the properties of OVS, in Figure 12 we plotted distributions of determiners in the object position in finite clauses with different constituent order. We take all the clauses with nominal objects and any type of subject (i.e. either nominal or

[30] According to Dryer (2013), in a sample of 1188 languages where a dominant constituent order can be established, there are only 40 languages (or ≈ 3%) where the dominant order involves O ≻ S.

pronominal or null).

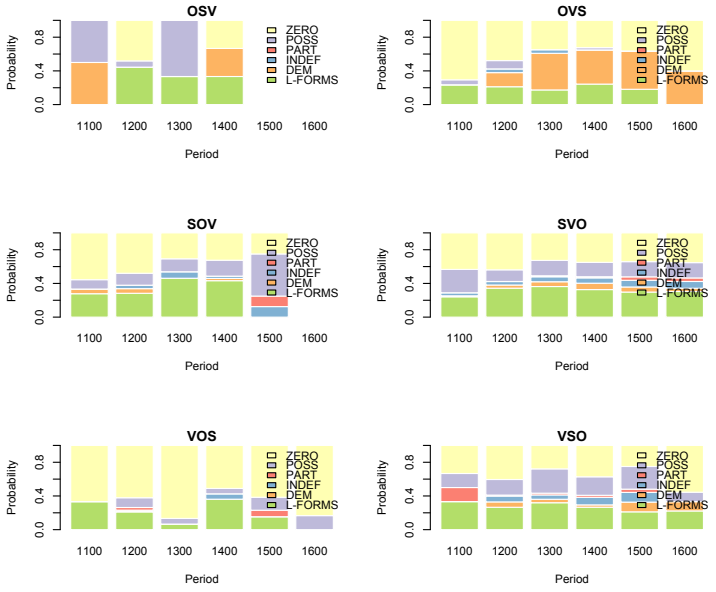

Figure 12: Determiner distribution in object position

Excluding from consideration numerically marginal (see Table 3) and therefore highly erratic OSV and VOS patterns, we observe a similarity between object determiner distributions in SOV, SVO, and VSO configurations.

OVS stands out by an exceptionally high proportion of demonstratives in object position. To understand what that means for the status of OVS, let us consider the role of demonstratives in the information structure in modern languages.

The most notable feature of demonstratives is the requirement to have an antecedent (or an element in the extralinguistic reality serving as a referent). This property has been captured by assuming a silent individual pronoun in the structure of demonstrative phrases (Nunberg 1993, Elbourne 2008). On the view that pronominals are variables which get their value based on a context-determined mapping, in order for such structure to be interpretable, the context must involve a salient individual to which the assignment function will map the pronominal index.

Another potentially relevant fact is that the antecedent of a demonstrative is normally available in the immediately preceding context. According to Zulaica-Hernández & Gutiérrez-Rexach (2011: 180), in Spanish, 80% of demonstratives

have their antecedents in the immediately preceding utterance. Stevens & Light (2013: 204) report that in English 78.08% of demonstratives have antecedents that are discourse-new in the context immediately preceding the relevant demonstrative.

In addition, demonstratives, in contrast to definite determiners, are characterized by the requirement that the nominal predicate do not denote a singleton (relative to a certain domain, Corblin (1987)). This is illustrated by the infelicity of (38) and (39) with demonstratives in the contexts implying uniqueness and by their felicity in contexts involving more than one individual with the relevant nominal property, as in (40).

(38) I fed #that/the dog. (If the speaker owns just one dog.)

(39) I saw #that/the brightest star.

(40) A woman$_i$ entered from stage left. Another woman$_j$ entered from stage right. That/#the woman$_j$ was carrying a basket of flowers. (From Roberts 2002 & Wolter 2006: 74)

These three facts mean that an object noun phrase with a demonstrative requires an immediately preceding antecedent and that it also requires that the extension of the nominal predicate in the relevant situation do not correspond to a unique entity. An antecedent for a demonstrative must introduces a new entity, since an entity which had been introduced before would normally be realized as a pronoun or a noun phrase with a definite determiner, which is incompatible with the non-uniqueness requirement. In this respect, consider examples in (41) and (42).

(41) Workers painted a house$_{\text{new}}$. That house really needed it.

(42) Workers painted the house/it$_{\text{old}}$. #That house really needed it.

Based on such considerations, Bosch et al. (2003) formulate a Complementary Hypothesis, which states that personal pronouns pick up discourse topics as referents, while demonstratives prefer non-topical referents. Furthermore, Zulaica-Hernández & Gutiérrez-Rexach (2011: 175) argues for Spanish that "speakers use demonstratives to mark topic or subtopic shifts". We thus conclude that the high rate of demonstratives with objects in OVS configurations indicates that the preverbal position was frequently used to indicate a shift in topic situation.

6 Conclusions

In this paper we explored organization of the information in a clause in light of Kučerova's (2012) proposal that givenness, when not expressed by dedicated morphemes, is monotonically marked from left to right. We proposed an amended version of the constraint that involves a non-presuppositional existential inference as the definition of givenness and tested it on a historical corpus of French, since the historical stages of French have both syntactic and morphological means of marking givenness. Our results show that the principle is borne out in the French historical data: in a corpus of 1,5 million words, we did not find any cases of New ≻ Given in clauses with bare arguments. The data also bear out the prediction that in case Given is marked morphologically, the left-to-right monotonicity requirement does not apply.

We also built the principle into a game-theoretic simulation of the use of constituent order and presupposition-triggering determiners to convey an information state. The results of our simulation come very close to the empirical historical French data, suggesting that it is viable component of a model of pragmatic language use.

Finally, we also showed that *New ≻ Given may provide insight into relative frequencies of various constituent orders.

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This volume contains thematic papers on semantic change which emerged from the second edition of Formal Diachronic Semantics held at Saarland University. Its authorship ranges from established scholars in the field of language change to advanced PhD students whose contributions have equally qualified and have been selected after a two-step peer-review process.

The key foci are variablity and diachronic trajectories in scale structures and quantification, but readers will also find a variety of further (and clearly non-disjoint) issues covered including reference, modality, givenness, presuppositions, alternatives in language change, temporality, epistemic indefiniteness, as well as – in more general terms – the interfaces of semantics with syntax, pragmatics and morphology.

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