On the Loss of High-Frequency Function Words

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The loss of high-frequency function words is puzzling. Although they form part of core grammar—and, in some cases, have done so for thousands of years—some function words seem to just suddenly disappear. While the grammaticalization of content words into function words correlates with increase in usage, the loss of high-frequency function words cannot simply be explained by decrease in usage because of the indispensable function of these words. This article deals with the loss of the Germanic question particle, of the Germanic coordinating sentence conjunction, and of the Germanic negation particle. It describes their gradual decline as a result of language-specific interactions between phonology, syntax, and information structure: Function words occupy a fixed syntactic position, where they are systematically unstressed. Instead of being strengthened in their old position, they were lost. Instead of linking the loss of elements of core grammar to frequency-based semantic bleaching, it is attributed here to the interaction of linguistic subsystems. It is suggested that this development was unavoidable as the non-Proto-Indo-European structure of Germanic subsystems was eroding old Indo-European lexical material. Germanic prosody was not in harmony with the substance of the inherited Proto-Indo-European lexicon.*

1. High-Frequency Function Words and a Methodological Dilemma.

Part of the answer as to why grammaticalization takes place is to maintain fundamental functions—such as means of expressing questions, combining words and sentences, or formulating negative statements—in order to ensure communication. In a grammaticalization framework and also in a theory of cyclic language change, the loss of core grammar units

is modeled. In both frameworks, the erosion of lexical items does not lead to the loss of fundamental functions but is related to an emergence of alternative means of expression—functions are maintained (von der Gabelentz 1891:255 "Spirallauf der Sprachgeschichte"):

> Was heute Affixe sind, das waren einst selbständige Wörter, die nachmals durch mechanische und seelische Vorgänge in dienende Stellung hinabgedrückt wurden. […] Nun bewegt sich die Geschichte der Sprachen in der Diagonalen zweier Kräfte: des Bequemlichkeitstriebes, der zur Abnutzung der Laute führt, und des Deutlichkeitstriebes, der jene Abnutzung nicht zur Zerstörung der Sprache ausarten lässt. Die Affixe verschleifen sich, verschwinden am Ende spurlos; ihre Functionen aber oder ähnliche bleiben und drängen wieder nach Ausdruck. Diesen Ausdruck erhalten sie, nach der Methode der isolirenden Sprachen, durch Wortstellung oder durch verdeutlichende Wörter.

> Today's affixes were formerly independent words which were later degraded, by mechanical and mental processes, to an auxiliary function. […] The history of languages is situated on a diagonal between two forces: the need for convenience, which leads to the erosion of sounds, and the need for perspicuity, which prevents that erosion from destroying a language. The affixes are slurred and finally disappear without a trace; their functions, however, or similar ones, remain, and still need to be expressed. They attain this expression, as in isolating languages, through word order or the use of clarifying words.[1]

Von der Gabelentz, in the 19th century, argues that function is always preserved, either by words or by word order, and there is a current debate as to whether the emergence of new constructions should be integrated into a grammaticalization framework.[2] As demonstrated below, the loss of the function words discussed in this paper goes hand in hand with constructional change. However, it is the underlying assumption of mechanical reduction and the theory of cyclic language change that the

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[1] All translations are mine, unless otherwise indicated.

[2] Bybee (2003a:146), for instance, argues: "If grammaticalization is the creation of new constructions (and their further development), then it also can include cases of change that do not involve specific morphemes, such as the creation of word order patterns." For a discussion, see Noël 2007.

paper focuses on: Why erosion instead of stability? The answer offered here is language-specific.

Frequency-based semantic bleaching and inflationary use are usually referred to as an explanation for grammaticalization. Inflationary use of constructions is caused by the wish to gain prestige through the use of "more valuable" constructions in terms of complexity and expressivity; inflationary use leads to a loss of expressivity (Haspelmath 2002:273). Semantic bleaching and phonetic reduction are also discussed in terms of frequency:

> There are two kinds of change which are always associated with grammaticalization: Phonetic reduction and semantic bleaching or generalization. Phonetic reduction takes place as a lexeme is incorporated into a more complex construction, losing its integrity as a word. Semantic reduction, or bleaching, occurs as a morpheme loses its intention […] The motivating force for both reduction and bleaching, I believe, is frequency of occurrence, which may in some cases cause the one kind of change without the other.   (Haiman 1991:153–154)

> Frequency of use leads to weakening of semantic force by habituation—the process by which an organism ceases to respond at the same level to a repeated stimulus […] Phonological changes of reduction and fusion of grammaticizing constructions are conditioned by their high frequency and their use in the portions of the utterance containing old or background information.   (Bybee 2003b:604)

However, the loss of high-frequency function words that encode basic functions is not a matter of course. When a function word has existed for hundreds or even thousands of years, thus typifying the rigidity of the form-function pair, the notion of cyclicity (in its automatic and iterative reading) is put into question.[3] What exactly starts the process of erosion?

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[3] See, for instance, Haspelmath 2002:271: "Allerdings gibt es einige Punkte, die Humboldt [1822] noch nicht gesehen hat. Am wichtigsten ist vielleicht die Tatsache, dass Grammatikalisierung ein zyklischer Prozess ist, der sich ständig wiederholt." [There are, however, a few details which Humboldt did not identify. Most important is perhaps the fact that grammaticalization is a cyclic process, which constantly repeats itself.] A strong argument against a continuous renewal of function words is that language acquisition is conservative. Even children's output with respect to the distribution of parts of speech matches their

The specific question then arises: What causes the loss of elements of core grammar? I argue that the loss of the Germanic high-frequency function words discussed in this article was inevitable for language-specific reasons.[4]

The Germanic high-frequency function words dealt with in this article used to encode the categories of question, conjunction, and negation, but then they disappeared. The old question particle Go. -*u*, the old coordinating sentence conjunction PIE [+]*kwe*, Go. -*uh*, and the sentence negation particle PIE [+]*ne*, MHG *ne* no longer exist as such in the modern Germanic languages. The attested long-time stability of these words shows that they were not eroded by frequent use. Also, strengthening strategies show that there was an attempt to preserve these words.[5]

The three function words discussed in this article are not derivable from content words because they are not attested prior to their grammatical function. While the loss and reinterpretation of the old negation particle, following the seminal paper of Jespersen (1917), has been subjected to many publications and is the standard example of cyclicity in language change, the same is not true for the old coordinating sentence conjunction and the old question particle. I suggest that the loss of the three particles was not coincidental but unavoidable. For the Germanic question particle, the sentence coordinating conjunction, and the sentence negation particle, the structural change is the outcome of interactions between language-specific phonology, syntax, and information structure. The findings presented here stand in contrast to models that

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parents' input: Children show a steady approximation towards the adult distribution (Behrens 2006).

[4] Askedal (2008:46–47) critically examines "assumptions of evolutionary sequentiality that play a prominent part in other definitions and discussions of grammaticalization, and of degrammaticalization as the putative reversal of grammaticalization: [1] content item > [2] grammatical word > [3] clitic > [4] inflectional affix." He criticizes this approach for neither capturing a universal clear-cut distinction between inflectional affixes and clitics nor giving sufficient consideration to general typological differences between languages.

[5] I use the term *word* for clitic particles as well. The reason is that the notion of clitic itself is in need of an explanation, which is why, in contrast to Zwicky 1985:285, it is not categorized here as a theoretical primitive.

assume that phonology follows syntax, as, for instance, developed by Jackendoff (2002:212), who states: "it is a point of logic that phonological integration has to await the completion of syntactic integration." Changes within subsystems can lead to reorganization of core grammar. Two such changes are examined here: the establishment of verb-second word order and the introduction of stress-based quantity. These changes caused the erosion of the older lexical material discussed here.

Below in section 2, relevant aspects of the Germanic subsystems are sketched. Section 3 gives a typology of stress in order to specify reduction processes. In section 4, the loss of the Germanic polar question particle as well as the emergence of verb-first polar questions are demonstrated to be the outcome of language-specific subsystem interaction. Section 5 deals with the loss of the old coordinating sentence conjunction, section 6 with the loss of the old sentence negation particle. Section 7 compares the gradual decline of the particles discussed with the assumptions of grammaticalization theory and stresses the non-Indo-European nature of Germanic subsystems.

2. Changing Syntax, Changing Phonology, and Information Structure.

In the context of Proto-Indo-European, the syntactic pattern of Germanic, with the position of the finite verb in the left periphery, is an innovation. The new syntactic structure leads to a semanticization of word order. It is gradually interpreted as declarative (VO), imperative (VO), interrogative (VO), or subordinate (OV). The relevance of the correlation between word order and sentence mood for the loss of the old Germanic question particle is discussed below.[6]

The early Germanic phonological system displayed a structural innovation that led to drastic consequences as well. While Proto-Indo-European is reconstructed as a quantity language with free pitch accent, the Germanic combination of initial stress and stress-based quantity (see, for example, Dresher & Lahiri 1991) is of a distinctly different nature. When Germanic prosody meets Indo-European word structure, the old lexical material changes. Germanic prosody is detrimental to mono-

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[6] Sentence mood (for instance, V2 declarative, V1 imperative, V1 polar question) is distinguished from verbal mood (indicative, optative, imperative, etc.). The term *sentence mood* refers to sentence types characterized largely by formal features, such as verbal mood, word order, intonation, or particles.

syllabic nonrhematic words in those fixed rhythmic contexts that emerged in the newly developed Germanic syntax.[7] The words affected are gradually reduced to zero: They show peculiarities typical for unstressed syllables, such as deviation from the expected vowel quality. In the modern Germanic languages, the form-function pairs discussed in this article are lost. Phonology shapes grammar because when the core elements of grammar are deleted due to phonological reasons, they have to be replaced by either lexical or syntactic means, or both.

The third linguistic subsystem discussed here is information structure. Information structure determines the position of words based on their function (see, for example, Bergaigne 1878, Mathesius 1935 [1975], Musan 2010) and thus imposes rigid constraints on possible word orders. Syntactic change, therefore, has to be reconciled with information-structural requirements. Since the particles discussed here occupied a fixed syntactic position because of their function, they were not moved out of unfavorable rhythmic contexts. Even strengthening strategies with a local increase of phonetic substance remained futile because of the fixed position of the newly strengthened monosyllables or clitics: In a language with stress-based quantity, function words that do not form a foot on their own are weak, even when they form closed syllables. Instead of being successfully strengthened, the particles disappeared.

3. A Typology of Stress Categories.

Sentence accent, main stress, and rhythmic stress (or secondary stress) are similar from a phonetic perspective but different from a functional point of view. This functional difference provides a language-internal motivation for the reduction of only specific classes of words instead of all words.

Sentence accent is determined by semantic and emotional highlighting (Bolinger 1972:644). The speaker decides which word to emphasize (see, for instance, Firbas 1989), which is why the actual realization of stress in a sentence with more than one word is not predictable from a purely syntactic or phonological point of view. What is considered the most important word in a sentence depends on the

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[7] Depending on the syllable structure of a function word, even less than a monosyllable can be involved.

context. Usually, function words are not considered most relevant in this respect and therefore do not carry sentence accent.

If a word in a sentence carries sentence accent, the position of the accent within the word is the main stress position. Usually, research on main stress focuses on the rhythmic description of one-word sentences. The theoretical construct *prosodic word* emerged from such research. However, it has to be noted that rhythmic descriptions of one-word sentences are descriptions of marked environments (see Saran 1907 and Vennemann 1986). For monosyllabic words, the landing site for main stress is their only syllable. Because of the triviality of this correlation, and because function words are usually embedded in sentences, the categories of main stress and prosodic word do not play a role in this investigation.

The stress category relevant for the description of the rhythmic behavior of high-frequency function words is rhythmic stress. Rhythm is not restricted to one-word utterances; it evolves in sentences and thus interacts with syntax (see Hyman 1977, Noel Aziz Hanna 2003). The distribution of rhythmic stress is language-specific. This means that the description should take into account the language-specific well-formedness conditions for prosodic feet—in this case, the conditions in the early Germanic languages. By default, function words do not carry sentence stress. The lack of sentence accent on function words alone, however, does not preclude rhythmic stress on function words. Nevertheless, all of the discussed particles occur in rhythmic drop positions: With regard to all stress categories, they are systematically unstressed. In the following sections, it is argued that the old Germanic question particle, the coordinating sentence conjunction, and the sentence negation particle did not carry rhythmic stress as a consequence of the interaction of the language-specific subsystems.

4. The Loss of the Germanic Question Particle.
In the Modern Germanic languages, polar questions are indicated by verb-first word order. This construction is not Proto-Indo-European, and in addition, it is a peculiar one: Compared to other patterns used in the languages of the world, the Germanic construction is an extremely rare phenomenon. The question is: Why was verb-first word order grammaticalized in polar questions? In this section, the following answer is proposed: It was caused by the loss of the old question particle in

connection with the most obvious syntactic recoding of the question function.

4.1. Syntactic Positions and Interaction of Subsystems.

The way polar questions are constructed in the modern Germanic languages is very unusual from a typological point of view. According to the *World Atlas of Language Structures* (Dryer 2011a), languages with question particles are most frequent (584 out of 954 languages). Interrogative word order as the only marker occurs in the sample no more than 13 times, that is, in 1.4% of all cases (see figure 1). The 13 languages that use word order to encode polar questions are Manggarai (Austronesian), Palauan (Austronesian), Warekena (Arawakan), Hup (Nadahup), Czech, Spanish, and all analyzed Germanic languages, that is, Danish, Dutch, English, Frisian, German, Norwegian, and Swedish.

What is striking here, apart from the geographic distribution, is the historical perspective: In Germanic, a pattern common in the languages of the world (that is, the use of a question particle) was given up in favor of a marked syntactic pattern. Clitic question particles are a feature of Indo-European syntax and are still attested in Gothic.[8] The combination of typological and historical evidence suggests that the loss of the particle in the Germanic languages is not trivial. The example in 1 illustrates the Latin pattern with the particle *-ne*. The examples in 2 contain the Gothic question particle *-u*.

(1) venisti-**ne**   domum   ad tuos
      come.2SG.IND.PRF-Q home.ACC.SG.F to your.ACC.PL.M

      penates
      penates.ACC.PL.M

      'Have you returned home to your penates?'[9]   (Catull, Carmen 9.3)

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[8] I do not use the term *clitic* as opposed to the concept of prosodic word, which has been argued against above. I understand clitichood to be epiphenomenal; clitics can be motivated as a result of subsystem interaction (see Noel Aziz Hanna 2009).

[9] The translation is available at http://apcentral.collegeboard.com/apc/public/repository/ap02_sg_latin_lit_02_11575.pdf, accessed on March 30, 2011.

(2) a. skuld-**u** ist kaisaragild
shall.PSTPTCP-Q be.3SG.IND.PRS Caesar-tribute.ACC.SG.N

giban kaisara... ?
give.INF Caesar.DAT.SG.M

'Is it lawful to give tribute to Caesar?'[10]
(Mc 12, 14; see Braune 1912, §216)

b. ga-**u**-laubjats þatei magjau
believe-2DU.IND.PRS-Q that.CONJ can.1SG.OPT.PRS

þata taujan?
that.ACC.SG.N do.INF

'Believe ye that I am able to do this?'
(Mt 9, 28; see Braune 1912, §216)

The old Germanic polar question particle occurred, like the Latin one, in second position in the sentence, that is, in Wackernagel position. The Gothic particle *-u* attaches either to the first word or to the prefix; in the latter case, it is inserted into the word. Crosslinguistically, question particles are relatively rare in second position. According to the *World Atlas of Language Structures* (Dryer 2011b), in a sample of 883 languages, only in 52 languages question particles are found in second position, that is, in about 6% of all cases. It is argued here that the particles' occurrence in this syntactic position, in combination with the Germanic stress-based quantity prosodic system, led to the loss of the Germanic particle.

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[10] The translation is available at http://www.wulfila.be/, accessed on March 30, 2011.
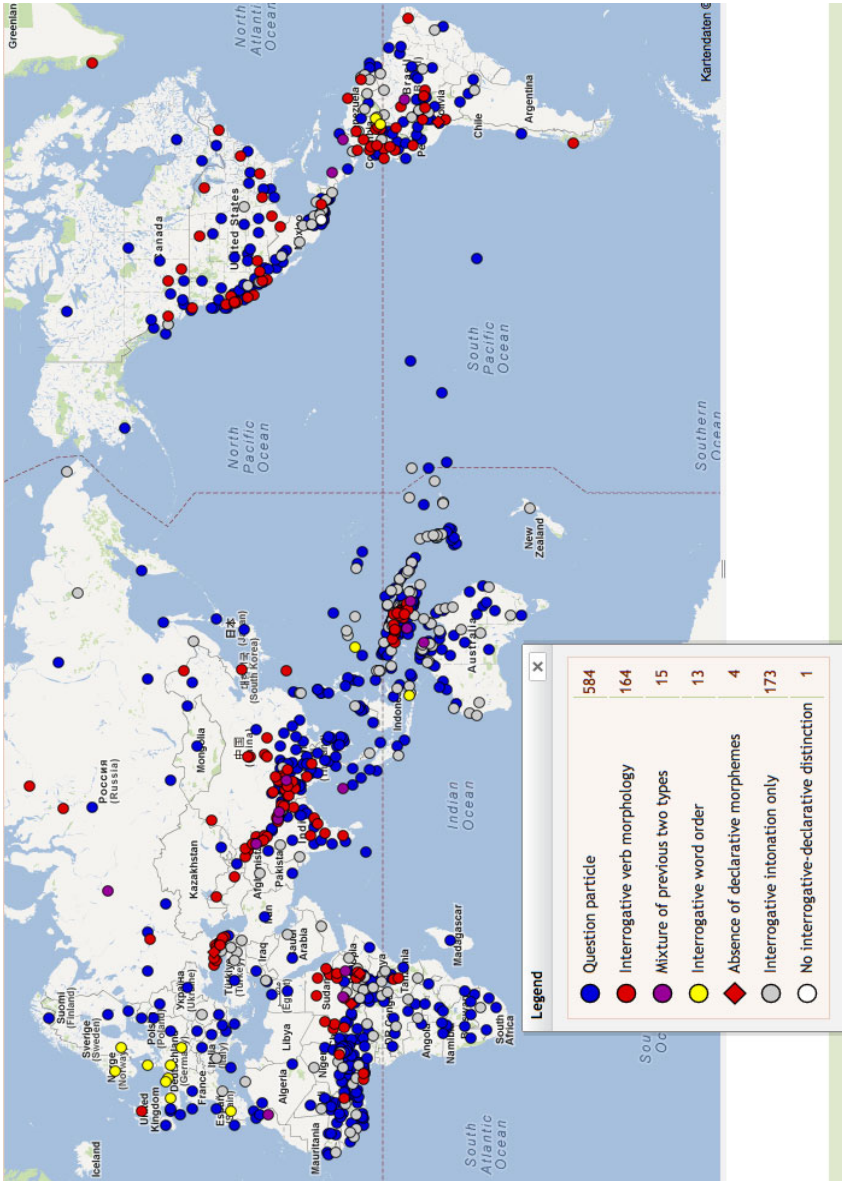
Figure 1. Polar questions with interrogative word order (WALS 2011).

I take the position that question particles are heads (see Vennemann 1976:631, Lehmann 1995:199) because they are specified by sentence radicals (that is, the propositions). Therefore, the following typology is predicted: In left-headed (VO) languages, question particles should occur in the left periphery, while in right-headed (OV) languages, they should occur in the right periphery. The correlation between headedness and the placement of the question particle was discovered by Greenberg (1963: 47):

> Universal 9. With well more than chance frequency, when question particles or affixes are specified in position by reference to the sentence as a whole, if initial, such elements are found in prepositional languages, and, if final, in postpositional.

In Gothic, question particles occur in the left periphery.[11] They are placed neither in final position, as would be expected for OV languages, nor at the absolute beginning of the sentence. Therefore, the question arises, in what respect is the second position a good position in the Gothic system? The answer lies in a language-specific interaction between phonology, syntax, and information structure. Table 1 shows the interaction hierarchy for the Gothic question particle -*u* in second position. It models the interaction of language-specific phonology (that is, stress-based quantity with initial stress), information structure, and OV/VO syntax, and displays the position of light question particles. The table makes use of the Optimality Theory (OT) format because OT illustrates hierarchies elegantly and, as an established framework, can be easily accessed. However, basic assumptions of OT, such as Universal Grammar, are not shared here. Instead of constraints, the first row displays interacting subsystems.[12] Table 1 provides a description but not an explanation.

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[11] This is true for both direct and indirect questions (see Eythórsson 1995:105–106).

[12] I adopt the position of connectionist neural networks (see, for example, Hauk et al. 2004) instead of a modular approach.

Gothic -*u*	phonology$_{Goth}$	information structure$_{Goth}$	syntax$_{Goth}$	
			OV	VO
(a) question particle < first element < rest of sentence	*		*	
(b) first element < question particle < rest of sentence		*	*	
(c) first element < rest of sentence < question particle		**		*

Table 1. Position of the light question particle in Gothic.

Table 1 describes the acceptability of the question particle in second position in the given system. The linguistic subsystems phonology, information structure, and syntax are given in the first row with their language-specific characteristics. Reading from right to left, the influence of syntax is weaker than the influence of information structure, and the influence of information structure is weaker than the influence of phonology. What is meant by "weaker" is not an explanation, but merely a technical description of the interaction hierarchy: Syntax is not followed if its patterns run contrary to the requirements of information structure, and a pattern governed by information structure is locally optimized by phonology if the position of the particle is problematic from a surface phonological perspective. For each subsystem, unfavorable serializations are indicated by the asterisk. The two asterisks in the cell, for instance, represent the distance from the beginning of the sentence, that is, one asterisk for the first word and one for the rest of the sentence.[13]

The hierarchy does not imply a serialization in language processing but provides the best hypothesis to describe the data. The hierarchy of subsystems is the same for all the three particles discussed in this paper. The actual serialization of elements is highlighted by the bold frame. The first column gives three possible serializations that occur in the

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[13] This is a simplification because in order to exclude third, fourth, fifth etc., position placement, an asterisk would have to be added for every word that separates the particle from the left edge of the sentence.

languages of the world. "First element" is a word, a prefix or a constituent introducing the sentence minus the question particle. Option (a) with an initial question particle is attested, for instance, in Arabic. Option (b) with the particle in second position is attested in Gothic. Option (c) with the question particle in final position is attested, for instance, in Japanese.

The relevant aspects of the subsystems are prosodic well-formedness, syntactic serialization—following the operator-operand principle—and recipient-oriented information structure. The Gothic subsystems can be sketched as follows. With respect to phonology, Gothic, like all the early Germanic languages, is a stress-based quantity language with initial stress. Like Classical Latin, Gothic had long and short syllables, but unlike in Latin, the quantity contrast was only distinctive in stressed syllables. All unstressed syllables are light, regardless of their structure. The minimal prosodic unit is the foot: A minimal Germanic foot consists of two morae, while an extended foot consists of three morae (see Dresher & Lahiri 1991, Vennemann 1995). It is important to note that one mora is not enough to form a foot. Thus, none of the old function words discussed in this paper forms a foot on its own.

As for Gothic syntax, there are opposing positions. The question at the heart of the reconstruction of Germanic syntax is whether Germanic begins as a language with unmarked OV, or whether it emerges as a VO language (see Vennemann 2000). There is disagreement on what the unmarked word order in Gothic was, which is why I give the alternatives in the ranking. Statistics on verbal placement in Gothic declaratives is still missing, but Gothic has fossilized morphological OV patterns (see Lehmann 1972:242).[14] According to the principle of natural serialization

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[14] Krause & Slocum (n.d.) note:

> The general conservatism displayed by Gothic in terms of morphology leads scholars to expect the unemphatic word order was typically SOV in accordance with the earliest Germanic inscriptions. The Gothic New Testament however generally looks to be a mirror image of its Greek model. Given the rich morphology of the Gothic language, such word order would not have posed much difficulty for the intended audience, be it a native speaker's choice of word order or not.

The quote is available at http://www.utexas.edu/cola/centers/lrc/eieol/gotol-1-X.html, accessed on May 16, 2011.

(Bartsch 1972:131, Bartsch & Vennemann 1972:136, Vennemann 1974: 347), ideally, all constituent operators are placed on the same side of their operands/heads, that is, [Operator [Operand]] in OV languages and [Operand [Operator]] in VO languages. It is of no actual consequence for the description of the interaction whether Gothic declaratives are classified as OV or VO since syntax occupies the lowest position in the hierarchy suggested here. In section 7, however, I concentrate on the syntactic data that differentiate Germanic languages from old Indo-European ones, including VO placement as a Germanic innovation. Gothic polar questions are clearly VO.

Regarding information structure, the argument rests on the presentation of linguistic material to the recipient. Recipient-oriented information structure means that the speaker constructs an intelligible sentence for the benefit of the hearer. Since function words carry essential information, it does matter where the speaker places them in order to efficiently convey their meaning to the recipient.[15] Phonology and syntax are language-specific in a way different from information structure: Although languages differ with respect to the way information structure is encoded, they share the general requirement that old and new information be presented effectively.

Coming back to the Gothic question particle, the subsystems interact in the following way. From a syntactic point of view, the question particle is best placed sentence-finally if Gothic had right-headed syntax since the question particle is a head (option c). From the perspective of recipient-oriented information structure, however, a particle placed at the end of the sentence is ineffective because the mood of the sentence is not indicated until the sentence is finished. Right-headed Japanese provides a counterexample to this: It does not follow the information-structural default placement because it has late placement of the question particle. However, Japanese polar questions are signaled not only by a particle, but also by prosody.[16] The sentence-final particle in Japanese does not

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[15] Since the distribution of function words is not regulated by information structure dominating syntax in all languages, information structure is represented as an independent factor in the ranking.

[16] "In spoken Japanese, the interrogative mood may be marked prosodically; if the negotiator is present, it carries tone 1, but if it is absent, the tone is instead tone 2" (Teruya 2006:170).

only signal sentence mood but also serves as a sign of turn-taking and is ideally placed for the latter function.[17] If Gothic had unmarked left-headed syntax, the position of the particle at the beginning of the sentence would be in harmony with it.

Why not first position? Placing the question particle in first position would be ideal from the perspective of information structure, but here is where language-specific rhythm comes in. In first position, the question particle would cause a systematic rhythmic problem. The Gothic question particle *-u* forms a light syllable in combination with onset material from its "host:" It forms an open syllable consisting of only one mora. In a hypothetical rhythmic scenario with *-u* in first position, the word following *-u* would, most frequently, be a content word. Gothic had initial stress, which means that the right-adjoining content word would start with a stressed syllable. As a result, almost every polar question would start with only half a foot, since the minimal foot requires two morae. Monomoraic Gothic *-u* cannot form a foot on its own. Thus, option (a) is ruled out for sentence rhythmic reasons—a monosyllabic open question particle can never form the head of a foot in a sentence with the most frequently used word order. By default, it cannot be stressed, not only because function words do not carry sentence accent, but also because the particle cannot carry rhythmic stress in this syntactic position.[18]

Therefore, option (b) with *-u* in second position provides the ideal solution for the Gothic system, given this lexical material. The particle is placed in a drop, which fits its phonological properties (that is, its systematic stresslessness and monomoraicity). Since this position is nearly sentence-initial, it also satisfies its grammatical function requirements. I suggest that rhythmic well-formedness on the sentence level motivates the insertion of Gothic *-u* in prefixed words, such as *ga-**u**-laubjats* in example 2b. The monosyllabic prefix *ga-* is just as bad a sentence starter as *-u*: A monosyllabic unstressed prefix cannot form the

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[17] "The Negotiator is realized at the end of the clause where the speaker is just about to hand over to the addressee […] Both Predicator and Negotiator thus create the 'finale' of the clause as an interactive mood" (Teruya 2006:48–49).

[18] A solution for a similar problem exists in Latin. The enclitic particle *-que* 'and' attracts the stress to the immediately preceding syllable: *'populus* 'people' but *popu'lusque*. Thus, a systematic rhythmic lapse is avoided.

head of a foot. However, the combination of both particles results in a resolved bimoraic foot, which guarantees rhythmic well-formedness.

4.2. Phonology, Position, and the Loss of the Polar Question Particle.

If the old Germanic question particle was part of a well-formed word order system, why then was it lost in polar questions?[19] As was outlined in the previous section, the old question particle is a monosyllabic function word that does not carry sentence accent and occurs in a fixed position in a rhythmic drop. It is not capable of forming a foot on its own and is, therefore, systematically unstressed.

It is a principle of Germanic historical phonology in general that vowel contrasts are only upheld in stressed syllables, while they are lost in unstressed syllables.[20] It is argued here that stress-based quantity gradually led to reduction and then to deletion of systematically un-stressed material. This kind of drastic absolute deletion can be observed throughout German with respect to systematically unstressed syllables: The reduction or loss of final syllables lead, for example, to the restruc-turing of the old plural system (see Werner 1969) and to syncretism in the verbal system (see Eisenberg 2006:152ff.). Stress-based quantity effected the loss of the old polar question particle, and also the loss of the two other particles—elements of core grammar—in drop position, discussed below.

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[19] There is a view that the lexical material is preserved in German *ob* 'if', which introduces indirect questions (Lühr 2007). An alternative position is taken by Kluge & Seebold (1999; s.v. *ob*), who analyze *ob* as an amalgamation of the pronominal stem [+]*e*- and [+]*bho*- 'both'. As to a possible connection between English *if* and German *ob*, the Oxford English Dictionary (s.v. *if*) notes:

> Old English *gif* (early West Saxon rare *gief*), late West Saxon *gyf* (Northumbr. rare *gef*), corresp. (more or less) to Old Frisian *ief*, *gef*, *ef* (*jof*, *of*), Old Saxon *ef* (*of*) (Middle Low German *jof*, Middle Dutch *jof*, *of*, Dutch *of*) 'if', Old High German *ibu* (*oba*, *ubi*), Middle High German *obe*, *ob*, German *ob* 'whether, if', Old Norse *ef* 'if', Gothic *ibai* 'whether, lest', *jabai* 'if, even if, although'. The phonetic relations of the various forms and their Old Germanic type or types, have not been satisfactorily determined.

[20] This development is a matter of degree. Icelandic, for instance, has only *i*, *u*, and *a* in unstressed syllables in contrast to a wide range of vowels in stressed syllables (see, for instance, Anderson 1969).

4.3. The Emergence of Verb-First Polar Questions in Germanic.
Quite naturally, a particle that indicates sentence mood cannot be deleted without reorganization, since the function has to be preserved. As has been argued, the old question particle was well placed in a rhythmic drop position, but it did not form a good rhythmic head. It was systematically unstressed and thus unstable. As a consequence, the typologically rare way of signaling polar questions by verb-first word order only emerged in Germanic.[21] The verb-first construction was not inherited from Proto-Indo-European (Meier-Brügger 2000:228).

    I suggest the following process of the semanticization for verb-first word order. The question particle *-u* was a feature of polar questions, as shown in 3 (see Fuß 1998:39), while content questions were constructed without this particle, as shown in 4.

(3) a. **maguts-u**   driggkan   stikl
       can.2DU.PRS-Q   drink.INF   cup.ACC.SG.M

       þanei   ik   driggka ... ?
       which.ACC.SG.M   I.SG.NOM   drink.1SG.IND.PRS

       'Can ye drink the cup which I drink?'
                                    (Mk. 10:38; see Eythórsson 1996:125)

   b. witaidedun   imma   **hailidedi-u**
       watch.3PL.IND.PRT   him.DAT.SG.M   heal.3SG.OPT.PRT-Q

       sabbato   daga.
       sabbath.DAT.SG.M   day.DAT.SG.M

       'And they watched him, whether he would heal him on the sabbath day'   (Mk. 3:2; see Eythórsson 1996:125)

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[21] This does not imply that VO word order in general was a consequence of the particle loss (see section 7). On the contrary, it is argued here that the loss of the particle is a consequence of the rigid word order in polar questions.

(4) a. **hva**   **skuli**   þata
    what.NOM.SG.N shall.3SG.OPT.PRS   that.NOM.SG.N

    barn   wairþan?
    child.NOM.SG.N become.INF

    'What manner of child shall this be?'
                                    (Luk. 1:66; see Eythórsson 1996:110)

 b. fraþjandans   **hva**   **sijai**
    asking.PRSPTCP   what.NOM.SG.N be.3SG.OPT.PRS

    wilja   fraujins
    will.NOM.SG.M   lord.GEN.SG.M

    'understanding what the will of the Lord is'
                                    (Eph. 5:17; see Eythórsson 1996:125)

Verb-first word order does not develop in content questions. The loss of the question particle paved the way for the functionalization of the typologically rare verb-first order in polar questions, where the interrogative mood is only signaled by verb-first. Germanic content questions, however, are marked by interrogative words (English *what*, Norwegian *kva/ hva* etc., German *was*, etc.) in first position. Content questions display verb-second word order, just like declaratives. They had neither the question particle -*u* nor unmarked verb-first syntax. Therefore, their development does not parallel the development of polar questions.

 The first element of the old polar question already was, by default, the finite verb (Eythórsson 1996:124)—when the particle was lost, the default verb position simply remained the same. The verb-first order became more and more unambiguous as an indicator of polar questions, since verb-first declaratives decreased and verb-second declaratives became stable. What is more, other Germanic question particles, such as OHG *eno/inno* and *na* 'isn't it', did not become obligatory. The verb in first position became the formal marker of the polar question. Thus, the rhythm-based loss of the question particle resulted in grammatical restructuring and in the semanticization of the word order pattern.

5. The Loss of the PIE Coordinating Sentence Conjunction.
The mechanism behind the loss of the old Germanic question particle is the same for both the old sentence negation particle and the old sentence coordinating conjunction. The interaction of subsystems led to the loss of the old lexical material within the constructions discussed. However, the reorganization did not follow the same pattern; each category followed its own path.

5.1. Positions and Interaction of Subsystems.
In the Indo-European languages, coordinating sentence conjunctions occur in first or in second position. This variation can be accounted for in terms of interactions of subsystems. Under certain rhythmic conditions, also present in Gothic (see the example in 5), the marked placement in second position is advantageous.

(5) þat-**uh**   samo   jah   þai
    this.NOM.SG.N-and same.NOM.SG.N and   this.NOM.PL.M

    waidedjans...   idweitidedun   imma.
    bandit.NOM.PL.M   insult.3PL.IND.PRT him.DAT.SG.M

    'And in the same way, the bandits, too, insulted him.'
                           (Matt 27:44; see Eythórsson 1996)

While Gothic *-uh* 'and', just like cognate Latin *-que* 'and' and PIE *-kwe* 'and', occurs in second position, the same is not true for Germanic lexical substitutes such as OE *ond* and OHG *endi/inti*.[22] Instead, the replacements occur between the conjoined sentences.[23] Just as in the case

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[22] "Ai. *ca*, av. *ča*, ap, *čā* enklit. 'und'; lyd. *-ḵ* 'und'; gr. *te* 'und'; venet. *-ke*, lepont. *-pe*, piken. *-p*; lat. *-que*; *ne-que* = osk. *-umbr*. *nep*, *neip* 'neque' = air. *na-ch*, mcymr. usw. *nac* 'nicht' (zum *a* aus *e* s. unter *ne* 'nicht'), vgl. lat. *atque* 'und dazu' (*ad + que*) = umbr. *ap(e)* 'ubi, cum'; got. *ni-h* (usw., s. unter *ne*) 'nicht'; (s. auch ahd. usw. *noh* unter ⁺*nu* 'nun'); bulg. *če* 'aber, und, da, weil', čech. alt *a-če*, *ač* 'wenn', poln. *acz* 'obgleich, obwohl" (Pokorny 1959; s.v. *kʷe*).

[23] The Gothic conjunction continues PIE ⁺*n̥kʷe* (see Feist 1939; s.v. *-uh*, *-h*) or PIE ⁺*kʷe* (Braune & Heidermanns 2004:§24, note 2). Lat. *que-* continues PIE ⁺*kʷe*. Lat. *et* 'and' is a later development, which is considered to be based on a

of the old question particle, the second position of the Gothic coordinating conjunction was a good solution in terms of sentence rhythm because the syllable was light and systematically unstressed. Table 2 illustrates the interaction of the linguistic subsystems in stress-based quantity languages with initial stress and OV/VO syntax, and displays the position of light coordinating sentence conjunctions.

Gothic -*uh*	phonology$_{Goth}$	information structure$_{Goth}$	syntax$_{Goth}$	
			OV	VO
(a) coord. conj. < first element < rest of sentence	*		*	
(b) first element < coord. conj. < rest of sentence		*	*	
(c) first element < rest of sentence < coord. conj.		**		*

Table 2. Position of the light coordinating sentence conjunction in Gothic.

In the Indo-European languages, sentence conjunctions belong to the second conjunct. According to Ross (1986:100), this is always the case for clitic sentence conjunctions. However, from a syntactic point of view, Indo-European clitic sentence conjunctions are placed at the wrong end of the sentence: As heads, they should occur at the end of the sentence in languages with unmarked OV order (option c). This shows again that syntax does not necessarily determine the position of function words with a very wide scope.

    From the perspective of information structure, coordinating sentence conjunctions are best placed between the conjuncts, that is, before the first element of the second sentence (option a). A sentence conjunction that occurs at the end of the second conjunct is ineffective from the functional point of view. However, placing Go. -*uh* in first position would be unfavorable for prosodic reasons. As a light monosyllable, in this position it would cause the same kind of rhythmic error as the

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locative adverb ⁺*h₁eti* 'above, beyond' (Baldi 1999:361). For the reorganization of the Latin conjunction, see Noel Aziz Hanna 2009.

question particle *-u*: Whenever the sentence-initial position is followed by a stressed content word, the sentence would start with a defective foot because unstressed *-uh* is monomoraic. As a consequence, second position is the best solution in terms of Gothic subsystem interaction for the given lexical material.

5.2. Loss of the Old Coordinating Sentence Conjunction due to Rhythm.
Nevertheless, the old enclitic sentence conjunction was lost. Evidence that the reduction of *-uh* had already started in Gothic comes from vocalism. Hopper (1969:42) notes that the change from *u* to *o* failed to appear in *-uh* because *-uh* was systematically unstressed. Assimilation is another indicator of disintegration. Go. *-uh/-h* can assimilate to the adjoining words (for example, *wasuh-þan > wasuþþan* 'but it was'; Braune 1912, §82), which means that lexical unity faded.

For monosyllabic unstressed *-uh*, stress-based quantity meant that it was systematically reduced. As a function word, *-uh* did not usually carry sentence accent. Since it occurred in a fixed drop position—usually between stressed words—it did not carry rhythmic stress either.

5.3. The Grammatical Consequence: Lexical and Syntactic Restructuring.
The grammatical consequence, in this case, was both lexical and syntactic reorganization. The situation in Old High German is given as an example. In Old High German, disyllabic *endi/inti*, etc., 'and' appears in first position. The word has probably evolved from an adversative adverb (Kluge & Seebold 1999; s.v. *und*). Since *endi/inti* both contain a closed syllable followed by an unstressed syllable, they form extended feet if stressed. There would be no rhythmic advantage in placing such a conjunction in second position. An Old High German sentence starting with *endi/inti* fulfills the rhythmic well-formedness conditions.

Table 3 presents the interaction of linguistic subsystems in stress-based quantity languages with initial stress and OV/VO syntax. The particular example is the Old High German coordinating sentence conjunction. Again, the syntactic requirements of an OV language would be best satisfied if the head were placed in final position. Although in Old High German, OV word order was unmarked with respect to operator-operand serialization, the language was already showing a preference for verb-second in the declarative sentence. Also, for the purposes of information structure, a conjunction at the end of the second conjunct

would be ineffective. Since the Old High German function word is trimoraic when stressed and thus a well-formed foot, the phonological system does not create a systematic error if the conjunction is placed in first position.

OHG *endi/inti*	phonology$_{OHG}$	information structure$_{OHG}$	syntax$_{OHG}$	
			OV	VO
(a) coord. conj. < first element < rest of sentence			*	
(b) first element < coord. conj. < rest of sentence		*	*	
(c) first element < rest of sentence < coord. conj.		**		*

Table 3. Position of the foot-forming sentence conjunction in OHG.

Following the loss of the old function word documented in Gothic, the structure was reinterpreted in the other Germanic languages, with the use of new lexical material. A new word in a new syntactic position took over the function of the old conjunction.

6. The Loss of the Proto-Indo-European Sentence Negation Particle.

The third high-frequency function word discussed in this context is the old Proto-Indo-European sentence negation particle. In this section, I discuss its gradual decline and loss. I examine this development starting from Old High German, continuing into Middle High German, and then to New High German.[24] While the old lexical material was lost as a sentential negation, it survived as a word negation. This functional split demonstrates that it is not a general deletion due to frequent usage that lies at the heart of the loss. An alternative view is that the old particle was lost because of its redundancy. While redundancy is obvious and undoubted with respect to, for instance, Middle High German double

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[24] Unless otherwise indicated, the data were extracted from my SQL German database (Noel Aziz Hanna 2009). The database comprises more than 190,000 sentences and more than 1,900,000 words; it is parsable for syntactic positions.

negation, this section focuses on why the particle could no longer fulfill its function.

6.1. Jespersen's Cycle.

The reduction and subsequent reinterpretation of the negation particle is known as Jespersen's Cycle (Jespersen 1917). Table 4 gives the details for Standard German.[25]

Phase I	*ni*	$+ V_{fin}$	
Phase II	*ni*	$+ V_{fin}$	+ (*niwiht*)
Phase III	*en/ne*	$+ V_{fin}$	+ *niht*
Phase IV	(*ne*)	$+ V_{fin}$	+ *niht*
Phase V		$+ V_{fin}$	+ *niht*

Table 4. Jespersen's Cycle (see Donhauser 1996:202).

The details of the loss and reinterpretation of the sentence negation particle are well studied, and an ample amount of literature on the topic is not quoted here.[26] However, the motivation for this gradual loss can only be revealed taking into account language-specific sentence rhythm. Here this loss is motivated in terms of the same kind of interaction among linguistic subsystems as the loss of the old question particle and the old coordinating sentence conjunction. The reorganization was syntactic and lexical.

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[25] Phase I: Early Old High German mononegation *ni*; phase II: Late Old High German negation with optional *niwiht* 'not a thing'; phase III: Middle High German obligatory double negation; phase IV: Early New High German optional *ne* and obligatory *nicht*; phase V, after the 16th century: mononegation *nicht*.

[26] Dialectal differences are not commented on because the result is the same: The loss of the old negation particle occurred in all German dialects (as well as genres; see Pensel 1976:323).

6.2. *The Loss of the Old Sentence Negation Particle due to Rhythm*.

PIE *⁺ne* was a stable function word for thousands of years. Nevertheless, it disappeared from the Germanic languages as a sentence negator.[27] Like the old question particle and the old coordinating conjunction, the inherited negation particle is a monosyllable that usually does not carry sentence accent and occurs in a fixed position. In Old High German, the fixed position is the position immediately preceding the finite verb. In Middle High German main clauses, the preverbal position becomes more and more limited to the Wackernagel position (see Noel Aziz Hanna 2008a).

It should be noted that the German data do not exactly conform to Jespersen's Cycle. The Old High German negation particle has been weak since its earliest documentation—OHG *ni* contains an *i* instead of PIE *e* (Braune/Eggers 1987:§70–77), which is a reduction phenomenon.[28] However, despite this reduction, negative sentences in the oldest German texts are, by default, mononegative. Also, the Standard German negation particle is frequently reduced (*nich, ned*, etc.), but it is not strengthened by an additional element.

The establishment of verb-second declaratives and its rhythmic consequences further weakened the Germanic negation particle. In Old High German, *ni* could still start the sentence. Otfrid, who marks stressed

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[27] East, West, and French Flemish have been discussed as exceptions to the overall Germanic situation:

> It is furthermore of interest that the one small corner of the Germanic area in which the original discontinuous negation survives, at least as an option, is contiguous to French, a language which also has the (NEG) V NEG strategy, and perhaps the contiguous dialect, too. So contact interference is not to be ruled out off-hand.
>
> (van der Auwera 2011:302)

Because of the singularity of the structure in modern Germanic in combination with its limited areal occurrence, I assume a contact-induced phenomenon.

[28] The vocalism demonstrates that it behaves like an unstressed prefix; OHG *gi-* and *fir-* instead of *ga-* und *fur-* (Braune/Eggers 1987:§70) show the same reduction to *i*. I owe this observation to Peter-Arnold Mumm (Munich).

syllables with an acute, gives several instances of stressed *ní*.[29] Examples of stressed *ní* in Otfrid's *Evangelienbuch* (9th century) are given in 6.

(6) a. **ní**   sie   sih   ginérien
       not   they.NOM.PL   themselves   nourish.3PL.OPT.PRS

   joh   scóno   giwerien.
   and   beautifully   dress.3PL.OPT.PRS

   '[The birds do not lack anything], neither food nor clothes.'
                                                        (Otfrid, Evb2.22.12)

   b. mit   mánagfalten   éhtin   **níst**
      with   many.DAT.PL.F   treasures.DAT.PL   not.is.3SG.PRS

   iz   bi   unsen   fréhtin.
   it.NOM.SG.N   by   our.DAT.PL.F   merit.DAT.PL.F

   '[A country] with many treasures. It has not been our merit.'
                                                        (Otfrid, Evb1.1.68)

The chance of *ni* carrying rhythmical stress became even lower in Middle High German due to the stabilization of verb-second declaratives. The Middle High German negation particle *ne* was preverbal, like the Old High German one. It usually appeared right before the stressed syllable of a finite verb.

A metrical analysis of manuscripts A, B, and C of the Middle High German *Nibelungenlied* shows that *ne* is only once unambiguously placed in a lift position (see example 7).[30] In a line from manuscript C it

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[29] The first example displays a negative conjunction and thus is not adjacent to the verb, the second an amalgamated form.

[30] One reviewer remarks: "The extent to which metrical stress overlaps with sentential stress or rhythmic stress is a matter that should be debated, not assumed." I thus refer to my publications on metrical change (Noel Aziz Hanna 2008b, 2008c, 2010a, 2010b; Noel Aziz Hanna & Vetterle 2009; Dufter & Noel Aziz Hanna 2009).

carries sentence accent, as can be concluded from parallel manuscripts A and B.[31]

(7)   Emphatically stressed *ne* (A: 1680.2, B: 1739.2, C: 1782.2)

| | A | daz ich der Niblunge | \| hortes \| nie ge\|pflach. \| Ø[32] |
| | | | F_{ext} F_{ext} F_{min} Ø |

| | B | daz ich hort der Nibelvnge | \| nie \| nie ge\|pflach. \| Ø |
| | | | F_{min} F_{ext} F_{min} Ø |

| | C | deich hort der Nibelunge | \| nie \|ne   ge\|pflach. \| Ø |
| | | | F_{min} F_{min} F_{min} Ø |

'that I did not take care of the hoard of the Nibelungs anymore'

The question, however, remains whether *niene* is on a level with words with enclitic *-ne*, since it is lexicalized as an adverb 'not, nothing'. In principle, all reduced syllables can carry rhythmic stress in Middle High German.[33] Thus, it is conspicuous that *ne* is almost never placed in a lift position. Furthermore, in the three *Nibelungenlied* manuscripts, there is not a single instance of a sentence starting with *ne*. This, in turn, means that the sentence-initial position in which *ne* could still be prominent in Otfrid's writing was no longer available for the particle.

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[31] The *Nibelungenlied* is oral poetry that was written down in diverse manuscripts. Manuscripts A, B, and C date from the 13th century. The meter of the *Nibelungenlied* is largely based on every-day language, and thus it did not pose major problems for the singer or scribe (see Noel Aziz Hanna 2008b). Each hemistich contains four measures, each of which starts with a stressed syllable. In order to analyze the distribution of stress in the *Nibelungenlied*, one simply has to study the material placed in initial position of the measure.

[32]   daz   ich   der   Niblunge   hortes   nie
       that I.NOM.SG the.GEN.PL Nibelung.GEN.PL hoard.ACC.SG.N never

       gepflach
       care.1SG.PRT

[33] For instance, *Nibelungenlied* C: 20.4.2 *div 'was ze 'San'ten ge'nant* 'it was called Xanten'.

The Middle High German particle was not easily relinquished. After all, the loss of high-frequency function words affects core grammar. There were attempts to strengthen the particle, which were, however, futile for prosodic reasons. As a consequence of being systematically un-stressed, the particle underwent denuclearization; as a strengthening strategy, the weakening was followed by prothesis: *ne* became *n* and then *en*. However, the strengthening resulted in just another light mono-syllable, monosyllabic *en* being in preverbal drop position. An unstressed monosyllable does not form the head of a foot if followed by a stressed syllable in a left-headed stress-based quantity language. Since *ne* usually precedes the stressed syllable of a verb, it is integrated as a drop in the preceding foot. The particle was gradually weakened and finally deleted due to becoming unstressed more and more frequently in a stress-based quantity language.

6.3. The Grammatical Consequence: Lexical and Syntactic Restructuring.
The grammatical consequence of the particle decline was lexical and syntactic restructuring. In German, the old negation particle *ne* was replaced by *nicht*, which originally was the accusative *niwiht* 'not a thing'. The function word *niwiht* contains the old word negation *ne*, which again illustrates the core function of the particle and the drastic nature of its loss as a marker of sentence negation. Table 5 outlines the interaction of linguistic subsystems in a stress-based quantity language with VO syntax (Middle High German). It displays the position of the light Middle High German sentence negation particle *ne*.

MHG *ne*	phonology$_{MHG}$	information structure$_{MHG}$	syntax$_{MHG}$
(a) first element < NEG ne < V < rest of sentence			*
(b) NEG ne < V < first element < rest of sentence	*		
(c) first element < rest of sentence < NEG ne < V		*	*

Table 5. Position of the light sentence negation particle in MHG.

In Middle High German, the negation particle *ne* was left-adjacent to the verb. Middle High German had a rigid verb-second word order, which is why option (c) is syntactically disfavored. From the point of view of recipient-oriented information structure, an early marking of negation is more useful than a late one because it assists a faster sentence comprehension. Option (b), with the negation particle in first position, faces the same prosodic problem as in the case of the old question particle and the coordinating sentence conjunction. As the data from the *Nibelungenlied* show, the prefield position of the particle was avoided by the medieval scribes. Thus, the negation particle plus verb in second position is the best option within the Middle High German system.

Nevertheless, the stress-based quantity of Middle High German prosody caused further reduction of the monosyllabic and usually unstressed negation particle. As a consequence, it was lost. It does not take the prefield position in the analyzed manuscripts, and, just as in the Middle-High German data, the placement of the negation particle in first position is not an option in Modern German. Also, MHG *ne* is an adverb, and in VO languages, adverbs are best placed after finite verbs, not before them; preverbal adverbs are not in harmony with VO syntax.[34] In Standard German, this conflict is resolved by using mononegative *nicht*, the former strengthening device; as an old accusative, it occupies the position which is in harmony with Modern German OV syntax in subordinate clauses and with the VO pattern in VO main clauses.

7. Grammaticalization Revisited.

Both types of phenomena—the loss of the three particles and the diverse grammatical changes linked to their erosion—are language-specific. The results presented in this article are in line with neither the grammaticalization theory nor the notion of cyclic language change with respect to the following aspects:

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[34] Vennemann (1990) argues for harmony as a driving force behind language change. In the theory presented here, it is, as a consequence of the erosion of old function words, the choice of new lexical material including its placement, which is in harmony with syntactic innovations.

- The loss of particles and the functional reorganization are not based on semantic bleaching.[35]
- It is not inferred that particles that remained stable for thousands of years suddenly fell out of use. The former stability provides empirical basis for challenging models that view grammaticalization as a consequence of inflationary usage.
- There has been no indication of either loss or reinterpretation of the Modern Germanic function words, even though: a) they are high-frequency words; b) verb-first word order as the sole marker of polar questions is typologically rare; c) the coordinating sentence conjunctions and the negation particles in modern Germanic languages are usually unstressed.
- The processes referred to are not universal but language-specific. They are analyzed as a consequence of subsystem interaction.
- While the function of the particles is maintained, cyclic processes are not a driving force behind the reorganization. The changes can be linked to incompatibilities between lexical structure, positions of the function word, and prosody.
- The automaticity lies in the language-specific deletion of light elements, described here as a consequence of subsystem interaction, but not in the gradual deterioration of lexical units on a grammaticalization scale.
- The loss of grammatical functions due to the decline of a particle is prevented by the most economic solution. With respect to the emergence of verb-first polar questions, the problem was solved by all Germanic languages alike. With respect to the introduction of new lexical material and its syntactic behavior, there have been diverse solutions.
- The loss of the particles in the constructions discussed in this article took place in all Germanic languages. However, the reorganization was language-specific. It is, therefore, concluded that the loss of the

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[35] One reviewer comments: "I wonder whether the phrase '(semantic) bleaching' plays into the analysis at all, since we are dealing with function word loss, not content words becoming function words. These words, at least within the scope of this analysis, have never carried semantic content." Since there is extensive research on the semantics of function words, I am not sure whether this idea is a promising way around the methodological dilemma.

particles stems from a language-specific problem shared by all Germanic languages.

Finally, a general remark on the specific nature of Germanic in a Proto-Indo-European context is in order. It has been demonstrated in this article that core items of the Indo-European lexicon are incompatible with the Germanic prosodic system, and this is why unstressed syllables become reduced, regardless of their form or function. Thus, unstressed syllables gradually disappear, and the items discussed here are only three examples of many that lost their original function. Also, old Germanic verb-first syntax, attested as early as Gothic with its combination of word order and question particle, is a non-Indo-European factor and thus not derivable from an Indo-European source. The same may be true for the syntactic position of the old Germanic negation particle—unlike Germanic, several old Indo-European languages place sentence-initially negation particles detached from the verb, as an alternative to placing them before the finite verb (Hirt 1929, §237). The interplay of word order peculiarities and Germanic prosody resulted in the loss of the function words. Since both phonological and syntactic characteristics are not a late development within Germanic, I interpret them as part of the puzzle of its birth; Germanic is not simply a continuation of Proto-Indo-European; it differs from it in all linguistic subsystems.

The article aimed to demonstrate the impact of and compensation for the loss of high-frequency function words, and at modeling both their placement principles and their gradual decline. The catalyst of the breakdown of grammatical core items, however, lies outside the de-scribed system interaction and is related to the non-Indo-European nature of Germanic.

8. Conclusion.

The loss of high-frequency function words in Germanic is analyzed as a consequence of language-specific subsystem interaction. High-frequency function words were systematically unstressed, which led to their erosion. Several factors prevented the words in question from carrying stress: their status as function words from the perspective of information structure, their placement in a fixed position, which—from a prosodic perspective—was a rhythmic drop, and the particular characteristics of Germanic syntax. The function words were neither moved to a more

favorable position nor successfully strengthened. Instead, they disappeared. The decisive factor in this loss was the incompatibility of the Germanic subsystems with the inherited structure of the PIE particles, that is, monosyllabicity or even less substance.

The three function words discussed here—the old Germanic question particle, the old sentence coordinating conjunction, and the old negation particle—behave similarly in terms of sentence rhythm. Grammaticalization—in a broad sense—was, in the three cases presented, a reaction to rhythmic reduction on the sentence level. Grammatical reorganization was different for all particles, leading to phonological strengthening and/or the reinterpretation of lexical substitutes, or to the emergence of new syntactic patterns. Mere phonological strengthening occurred in the transformation of *ne* to *en*; syntactic and lexical reorganization took place in the emergence of new Old High German *endi/inti* and Jespersen's Cycle; structural reinterpretation occurred in the typologically rare semanticization of verb-first word order in Germanic polar questions. It was argued that the loss of the three particles was unavoidable because the old lexical material became exposed to a prosodic and syntactic system detrimental to its integrity.

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