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Typology and usage: The case of negation

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Linguistic typology has recently started paying more and more attention to language use as an explanatory factor. In this approach, naturally occurring discourse data is used to account for the attested cross-linguistic patterns. This article offers a theoretical and methodological discussion of the usage-based approach taking the typology of negation as a case study. Negation is a particularly suitable domain for this kind of discussion, since (a) it is universally present in the world's languages and relatively frequent in discourse, (b) it is well-studied from a typological point of view, and (c) due to its special pragmatic properties, it shows a variety of discourse effects that can be possibly linked to cross-linguistic generalizations. We pay specific attention to negation in non-main clauses, a previously understudied combination of domains that can be expected to provide valuable insights due to some important similarities between the two domains.

Keywords: Typology; Usage-based linguistics; Explanation; Negation; Clause combining

1. Introduction

The roots of language typology go further back in time (see Graffi 2010, Ramat 2010 for overviews), but the systematic approach to cross-linguistic comparison that we today know as language typology started in the 1960s through the work of Joseph Greenberg (1963, 1966). Mainstream typology in the latter half of the 20th century involved empirical cross-linguistic work based on more or less extensive and more or less balanced world-wide language samples, using reference grammars as the main source of data. The cross-linguistic generalizations (types, correlations) drawn on the basis of the language sample were then to be explained in functional terms. Such explanations are based on the idea that language-external factors (meaning, use, processing) shape the structure of language and can thus be evoked as functional motivations for cross-linguistic structural

patterns. Cross-linguistic markedness patterns are, for example, explained by iconicity and economy (see e.g. Croft 2003). The tendency for languages to overtly mark the plural but not the singular is seen as motivated by iconicity in that a larger number of entities in the language-external reality is iconically reflected in more phonetic substance on the level of linguistic form. An economy explanation for the markedness of the plural refers to the textual frequency of the singular and plural and explains the overt marking of the plural by the idea that it is more economical to leave the more frequent category (singular) unmarked and use overt marking only for the less frequent category (plural).

The kind of approach to typology just described is by no means outdated – the range of variation that languages show is still poorly known in many domains of grammar and the traditional approach still has a lot to contribute to the cross-linguistic study of these domains. However, typology has become more versatile and approaches and new ways of doing typology have emerged. In addition to core grammatical topics, more and more is now being done, e.g. in lexical, phonological and pragmatic typology. On the methodological side, quantitative approaches to cross-linguistic variation have gained ground (distributional typology) and areal and historical factors have become important as explanations for cross-linguistic distributions (see Bickel 2007). Corpus-based methods have been developed and typological work based on (massively) parallel corpora with its own specific methods has become a visible branch of typology (see Cysouw & Wälchli 2007).

Corpus methods are becoming more and more relevant for typology in another way, too. In addition to using corpora as sources of data in cross-linguistic work, their significance is growing on the side of explanation. As noted above, functional explanations pay attention to extra-linguistic factors such as meaning, use and processing. Recently, more and more attention has been paid to language use as an explanatory factor. In fact, evoking textual frequency as a motivation for the markedness of the plural is a usage-based explanation, and already Greenberg (1966) discussed the importance of frequency in shaping languages. Thus, this is by no means a new idea in typology, but in practice explanations of typological patterns evoking textual frequency or other discourse phenomena have often been based on unsystematic observations or rather superficial examination of natural discourse. Authors such as Givón (1979, 2001), Du Bois (1985), Hawkins (2004) have discussed the ways in which cross-linguistic and intra-linguistic variation in discourse are related, but the use of more sophisticated

corpus methods to explain patterns found in large-scale typological work is not very common yet.

In this programmatic paper, we develop the idea further and propose ways in which usage data can be used in explaining typological variation. In other words, our focus at this point is more in discussing the approach than presenting actual results. In our theoretical and methodological discussion, we will take the typology of negation as the case to be examined. As we will argue further below, negation lends itself particularly well for examining the relationship of structure and use. The work is related to our ongoing project Negation in Clause Combining: Typological and usage-based perspectives (NiCC),[1] funded by the Academy of Finland, in which one important aspect is the integration of typological and usage-based work. Section 2 will discuss the relationship between typology and usage in more depth and detail. Section 3 will address a number of typological generalizations in the domain of negation and ways in which these can be related to and possibly explained by discourse factors. Section 4 will address negation in clause-combining in a typological and usage-based perspective. Section 5 will conclude the paper.

2. Typology and usage

While reference grammars continue to be the main data source for linguistic typology, recent years have seen typologists increasingly turning to usage data, i.e. naturally occurring texts, be they spoken, signed or written. Usage data takes centre stage in many sub-disciplines of linguistics, from corpus linguistics to interactional linguistics and discourse analysis. In this paper, we will not draw firm distinctions between these traditions, although our main focus will be on corpus linguistics.

The use of naturally occurring discourse in cross-linguistic comparison is part of the more general trend towards usage-based linguistics. Usage-based linguistics has been understood in two partly overlapping ways: as method and as theory. These two understandings can also be seen in the way in which typologists have utilized usage data.

[1] https://blogs.helsinki.fi/negation-in-clause-combining/

When seen as a method, usage-based linguistics refers to the use of naturally occurring discourse data (Laury & Ono 2019). When applied to comparative linguistics, this approach is sometimes known as token-based typology (term from Levshina 2016): in it, corpora are used as a source of data for cross-linguistic comparison in addition to or instead of other data types such as reference grammars and questionnaires. The corpora in token-based typology can be either parallel corpora, i.e. corpora based on translations of the same text(s) into different languages, or comparable corpora, i.e. corpora in different languages with similar sampling procedures. Typologists have used parallel corpora to see cross-linguistic similarities and differences in the expression of the same meaning in context. These results have typically been used to create probabilistic semantic maps (e.g. Wälchli & Cysouw 2012). Comparable corpora have been used in particular for studying discourse-level phenomena such as turn-taking (Stivers et al. 2009).

When seen as a theory, usage-based linguistics refers to approaches that emphasize the causal role of usage patterns in shaping grammars (e.g. Bybee 2006, 2010; Diessel 2019). Usage is then an explanatory factor for typological findings, whether they are based on reference grammars, questionnaires or even corpus data itself, as described in the previous paragraph. In this paper, we will mainly be concerned with usage-based linguistics in this theoretical sense, although we will not be committed to any specific usage-based framework. In usage-based approaches, language is seen as a complex adaptive system (Beckner et al. 2009) whose structure is continuously shaped by communicative pressures. The effect of such pressures is most clearly seen in diachrony, and therefore grammaticalization and related phenomena have an important place in usage-based approaches. If a function is common, it is likely to develop constructions of its own – in Du Bois's (1985: 363) words, '[g]rammars code best what speakers do most'. In this perspective, grammar consists at least partly of sedimented discourse patterns. Givón (1979: 209) characterizes this process as in (1).

(1) Discourse → Syntax → Morphology → Morphophonemics → Zero

According to Givón, discourse patterns may be simply paratactic in form. (1) describes a process whereby such a paratactic pattern is first syntacticized as a result of frequent use.

Over time, the resulting construction may further morphologize and lexicalize, thus losing its independent status. Ultimately, it may even erode completely.

Such frequency effects have an important place in usage-based explanations. Because prevalence creates predictability, frequent expressions can afford to receive more minimal coding (e.g. Haspelmath 2021). Crucially, communicative pressures are assumed to be similar across speech communities (apart from some that may be specific to certain language ecologies), and this in turn is assumed to explain typological similarities. In sum, not only is usage worth studying in its own right, but it can also be used to test hypotheses that are based on typological studies.

This idea has a long history in typology: already Greenberg (1966), citing Zipf (1935, 1949), used corpus data on several topics ranging from phonology to morphosyntax and lexical semantics to support the thesis that usage frequency can explain patterns of formal marking. Today, many studies that hypothesize a link between a typological pattern and usage draw on Hawkins's (2004) Performance–Grammar Correspondence Hypothesis. Hawkins's definition of the PGCH is in (2).

(2) Performance–Grammar Correspondence Hypothesis (PGCH)
Grammars have conventionalized syntactic structures in proportion to their degree of preference in performance, as evidenced by patterns of selection in corpora and by ease of processing in psycholinguistic experiments. (Hawkins 2004: 3)

The PGCH is linked to three efficiency principles, which Hawkins terms Minimize Domains (MiD), Minimize Forms (MiF) and Maximize Online Processing (MaOP). To simplify somewhat, the following predictions relevant to our subsequent discussion can be drawn from these principles. MiD predicts that grammars prefer structures where the processing domain between two interrelated items is as short as possible. For example, long-distance dependencies (e.g. *the students that you believe that Harry saw*) are dispreferred. MiF predicts that, the more predictable an element is in a given context, the more its formal expression can be reduced. For example, articles are very typical fillers of the determiner slot in English NPs compared to demonstratives, and accordingly, they are shorter phonologically (*the* vs. *that*). MaOP predicts that grammars avoid structures that would lead to incomplete or inaccurate analysis by the addressee during comprehension. For example, finite complement clauses in English favour

retaining the complementizer *that* in grammatical environments that are potentially ambiguous as it facilitates the recognition of the complement clause (e.g. *I believe (that) the boy knows the answer*). It should be noted that the PGCH offers a general perspective on the relationship between grammar and use, while the three efficiency principles, which focus on the processing of syntactic structures, only account for a subset of the wide variety of possible factors influencing discourse preferences.

An implicit part of the definition in (2) is that competing alternatives, e.g. singular vs. plural or nominative vs. accusative, are compared. It is in such sets of alternatives that PGCH predicts the most common option to receive the least amount of coding. Haspelmath (2021) presents evidence from a wide range of domains in support of this (see also Haspelmath 2006, 2008). A selection of results is given in Table 1: in each case, the construction on the left is more common in usage data than the construction on the right, and in each case, the construction on the right receives more overt coding.

More frequent	**Less frequent**	**Examples**
singular	plural	(*book – book-**s***)
nominative (A/S)	accusative (P)	(*he – hi-**m***)
allative	ablative	(*to – **from***)
positive	comparative	(*small – small-**er***)
present	future	(*go – **will** go*)
affirmative	negative	(*will go – will **not** go*)
inanimate patient	animate patient	(Spanish ∅ *la casa – **a** la mujer*)
3rd person	2nd person	(Spanish $canta_{3SG}$ / $canta\text{-}s_{2SG}$ 'sing(s)'
2nd person imperative	3rd person imperative	(*praise! – **let** her praise!*)
attributive adjective	attributive verb	(*small – play-**ing***)
A = transitive subject, S = intransitive subject, P = direct object, ∅ = no marker		

Table 1. Examples of universal grammatical coding asymmetries (Haspelmath 2021: 606, adapted)

Results such as those in Table 1 can be cast in terms of coding asymmetry: PGCH predicts that when there are two or more alternatives in a grammatical domain, their coding will be asymmetric such that the less frequent alternative will receive more overt coding. Negation is a classic example of such an asymmetry, as Section 3 will show.

3. Cross-linguistic variation in the expression of standard negation and its explanation by usage

There is a vast literature on negation in linguistics (see e.g. Horn 2001, 2010; Déprez & Espinal 2020). Narrowing down to typology, there is a good amount of relatively recent work, but attention has been paid to different subdomains of negation to very different degrees. Most attention has been directed at standard negation, i.e. negation in declarative main clauses with a verbal predicate. Other subdomains of negation with at least some large-scale typological work include negative imperatives (or prohibitives, see van der Auwera & Lejeune 2013), negation of stative predications (existence, identity, location, possession, etc., see Veselinova 2013), and the negation of indefinite pronouns (see Haspelmath 1997, 2013; Van Alsenoy 2014). Many aspects of negation have, however, not yet been systematically studied by typologists (see Miestamo 2017 for an overview on typological work on negation). In this section we will focus on standard negation and pay special attention to cross-linguistic generalizations for which discourse-based explanations have been proposed in the literature. Negative constructions can be typologized from at least four perspectives: (i.) type of the negative marker, (ii.), the position of the negative marker, (iii.) number of negative markers in a negative construction and (iv.) the symmetry or asymmetry of negation vis-à-vis affirmation. These perspectives will be discussed in Sections 3.2–3.4, along with proposed explanations. We will, however, start with the overt coding of negation in Section 3.1. In Section 4, we will turn to negation in subordinate clauses, a subdomain of negation that has received limited attention in typology until now.

3.1. The overt coding of negation

A basic fact about negation is that it is explicitly marked compared to affirmation, as in Table 1, where the negation of *will go* is *will not go*. Cross-linguistically, negation follows the usual pattern where the more common alternative (here, affirmation) is not marked or receives less coding than the less common alternative (here, negation). Following Croft

(2003), typological markedness can be defined by the overt coding[2] and behavioural criteria. According to the overt coding criterion, the marked category is expressed by at least as many morphemes as the unmarked one. The marked category is overtly marked more often than the unmarked one and whenever the unmarked category is overtly coded, then the marked one is as well. As for the behavioural criteria, the behavioural potential of the marked category is lower than that of the unmarked one; in this section, we will focus on overt coding and we will come back to behavioural potential in Section 3.5 below. Negation satisfies the overt coding criterion, as it is overtly coded almost universally whereas affirmation never is. Miestamo (2010) discusses the possibility of expressing negation without overt negators and concludes that this is an extremely rare strategy for marking standard negation. Even though this strategy does exist in a couple of languages, it does not provide a single counterexample to the markedness of negation, as the affirmative is not marked in these cases, either.[3]

As discussed in Sections 1 and 2 above, the overt coding of the marked members of category pairs such as singular vs. plural and affirmation vs. negation has been explained through economy by referring to the higher frequency of the unmarked member (see also Haspelmath 2006). The higher frequency of the unmarked category makes it less economical to overtly code the unmarked category. In order for such a usage-based explanation for a typological generalization to be valid, we need usage data that supports it. In the case of the lower textual frequency of negation, usage data is indeed available, see e.g. Hakulinen & al. 1980: 120–121 for Finnish (91 % affirmative vs. 9 % negative sentences in their corpus data, n = 9772) and Givón 2001: 373 for English (90 % affirmative vs. 10 % negative sentences, n = 263).

3.2. Type and position of negative marker

Paying attention to the type and position of the negative marker, typological work on standard negation has identified three main types of negative markers: particle, affix and

[2] Croft talks about the structural criterion, but we will follow Miestamo 2007: 294 in calling it the overt coding criterion instead.

[3] In fact, as noted by Miestamo (2007: 305), affirmation is never marked – markers that are labelled affirmative markers in some grammars turn out to be declarative or emphatic markers rather than pure affirmative markers.

verb (Dahl 1979, Payne 1985, Dryer 2013a,b). The three main types of negative marker are illustrated in (3)–(5) respectively.

(3) Swedish (constructed example)
Hon arbetar inte.
3SG.F work.PRS NEG
'She doesn't work.'

(4) Turkish (van Schaaik 1994: 38)
Çalış-ma-yacak.
work-NEG-FUT
'She will not work.'

(5) Finnish (constructed example)
Hän ei tee työtä.
3SG NEG.3SG do.CNG work.PAR
'She doesn't work.'

Standard negative constructions can also be classified according to the position of the negative marker relative to the main verb of the clause: negative particles and auxiliaries can appear before or after the verb and negative affixes may be prefixes or suffixes. All these types exist, but there are clear cross-linguistic tendencies. Already Jespersen (1917) suggested that the negator tends to precede the verb and, furthermore, it tends to appear close to the verb. Both of these tendencies were confirmed by Dahl (1979: 91–92) and later by Dryer (2013b); the tendency for negation to precede the verb is often referred to as the Neg-First principle (Horn 2001).

To turn to possible usage-based explanations of these cross-linguistic tendencies, the Neg-First principle can be understood by the importance of the negator for the correct interpretation of the verb: from a processing perspective, it is better to have it before rather than after the verb. Negators will thus preferably occur before the verb in discourse and in many languages this tendency has been conventionalized as a grammatical pattern. In terms of Hawkins's (2004) processing principles, this would be an explanation based on maximising online processing (MaOP).

As for the tendency of the negator to appear close to the verb, Thompson (1998) attempts to account for it by relating it to the fact that negation typically does not target anything that has been explicitly mentioned in the discourse context (Tottie 1991). Consequently, according to Thompson, negatives do not have a strong tendency to participate in specific adjacency pairs. This contrasts with interrogatives, whose primary characteristic is appearing in a question–answer pair. Interrogatives are marked typically either in initial or final position in an intonation unit, or they are marked prosodically over the entire course of it. Thus, whereas interrogatives are motivated in relation to the interactional structure, negation is motivated in terms of reporting events or states, i.e. in terms of clause structure and predication (we will, however, come back to discourse context motivating other aspects of negation in Section 3.4). According to Thompson, this would explain the propensity of negation markers to appear near the main verb.[4] Her account can be cast as domain minimization (MiD) in Hawkins's (2004; see Section 2) terms: clausal negation targets the predication expressed by the verb, and grammars prefer to keep the processing domain – in this case the distance between the negator and the verb – as short as possible.

3.3. Number of negative markers

Languages may have one, two, three or even four negation markers in their standard negation constructions (Dryer 2013a; Vossen & van der Auwera 2014). We have already seen examples of one negation marker in (3)–(5). The other options are illustrated in (6)–(8).

(6) French (constructed example)

Elle	*ne*	*viendra*	*pas.*
3SG.F	NEG	come.FUT.3SG	NEG

'She will not come.'

[4] The main interest in Thompson's account is perhaps in explaining the placement of interrogatives. It is because interrogatives participate in adjacency pairs that they tend to be placed clause-peripherally. Negation lacks that characteristic and is therefore placed close to the verb just like other categories intimately associated with the verb.

(7) Nese (Crowley 2006: 70)
∅-se-be-yes-te
3SG.R-NEG-NEG-walk-NEG
'(S)he did not walk.'

(8) Lewo (Early 1994: 405)

pe-re	*a-pim*	*re*	*poli*
NEG-NEG	3PL.S-R.come	NEG	NEG

'They didn't come.'

The most common option cross-linguistically is to have one negative marker (Dryer 2013a). This is straight-forwardly accounted for by general principles of economy, and it thus falls under Hawkins's (2004) MiF principle. Negative doubling is relatively uncommon: in Dryer's (2013a) sample of 1157 languages, 119 display double negation, and triple (or quadruple) negation is extremely rare with only six languages showing optional triple negation in Dryer 2013b. Negative doubling, tripling and quadrupling are typically accounted for by the development known as Jespersen Cycle (Jespersen 1917; Dahl 1979; van der Auwera 2009), whereby an item is routinely added to a negative clause so that it is reanalysed as part of that construction, sometimes even replacing the original negator. The classic example is the replacement of the French solitary negator *ne* with the bipartite negative construction *ne…pas* (*pas* originally meaning 'step' and being used as a minimizer to mean 'not a step, not at all'), which in present-day colloquial French has reduced to just post-verbal *pas*. While Jespersen attributed this process to the phonological weakening of the original negator, a more probable explanation is that the addition of the second negative element serves an emphatic or clarifying function (see van der Auwera 2009 for discussion). Negative doubling would therefore represent a syntacticization of a discourse pattern in which negation receives special emphasis or clarification, thus corresponding to the early stages of Givón's schema in (1) in Section 2. For example, Hansen and Visconti's (2009) diachronic corpus study of French and Italian suggests that, at least in these languages, negative doubling first emerged in contexts where discourse-active concepts were negated, which would lend support for

the view that emphasis drives negative doubling (but see Schwenter 2006 for a critique of the notion of emphasis). This explanation arises from the discourse context of negation that will also play a central role in explaining some asymmetries between affirmatives and negatives that we will turn to in the next section.

3.4. Symmetry and asymmetry of negatives vis-à-vis affirmatives

Looking at the structure of the negative beyond the negative marker, Miestamo (2005) made a distinction between symmetric and asymmetric negation according to whether or not negatives differ from affirmatives by anything else than the mere presence of the negative marker(s), and then further distinguishing a number of subtypes of asymmetric negation according to the nature of the structural differences.

Symmetry and asymmetry can be observed between constructions and paradigms. If there is no other difference between a negative and its affirmative counterpart than the presence of the negative marker(s), we are dealing with a symmetric construction as in the Daga example (9). Asymmetric constructions, on the other hand, mean further structural differences between the negative and the affirmative, e.g. in Forest Enets (10) where the negative marker is an auxiliary verb carrying the finite verbal inflections and the lexical verb is in an invariable connegative form. Symmetric paradigms show a one-to-one correspondence between the paradigms used in affirmatives and negatives as in Romanian (11), whereas in asymmetric paradigms the correspondences are not one-to-one, e.g. in Burmese (12), where the affirmative paradigm makes a distinction between actual, potential and perfect but the negative has only one form corresponding to all three and these distinctions made in the affirmative are lost in the negative.

(9) Daga (Dagan) (Murane 1974: 113, 115)

a. *wat agoat mum-en*
help OBJ.FOC.3PL-3
'He helped them.'

b. *ya wat agoat mum-en*
NEG help OBJ.FOC.3PL-3
'He didn't help them.'

(10) Forest Enets (Uralic, Samoyedic) (Siegl 2015: 47)

a. *mud' Dudinka-xan d'iri-đ?*
1SG Dudinka-LOC.SG live-1SG
'I live in Dudinka.'

b. *mud' Dudinka-xan ńi-đ? d'iri-ʔ*
1SG Dudinka-LOC.SG NEG-1SG live-CNG
'I do not live in Dudinka.'

(11) Romanian (Indo-European, Romance) (constructed examples)

a. *(a) cânta* 'to sing' PRS

	AFF	NEG
1SG	*cânt*	*nu cânt*
2SG	*cânţi*	*nu cânţi*
3SG	*cântă*	*nu cântă*
1PL	*cântăm*	*nu cântăm*
2PL	*cântaţi*	*nu cântaţi*
3PL	*cântă*	*nu cântă*

b. *(a) cânta* 'to sing' IMPF

AFF	NEG
cântam	*nu cântam*
cântai	*nu cântai*
cânta	*nu cânta*
cântam	*nu cântam*
cântaţi	*nu cântaţi*
cântau	*nu cântau*

(12) Burmese (Sino-Tibetan, Burmese-Lolo) (Cornyn 1944: 12–13)

a. *θwâ-dé*
go-ACT
'goes, went'

b. *θwâ-mé*
go-POT
'will go'

c. *θwâ-bí*
go-PERF
'has gone'

d. *ma-θwâ-bû*
NEG-go-NEG
'does/did/will not go, has not gone'

Note that in the Romanian example the construction is symmetric too, while in Burmese the construction is asymmetric – it is not a simple addition of negative markers to an otherwise identical affirmative as the suffixal part of the negative marker replaces the TAM markers. This does not, however, mean that there is a direct dependency between the (a)symmetry in constructions and paradigms, but they are (partly) independent dimensions. Cross-cutting the constructional vs. paradigmatic distinction, types of

asymmetry can be identified on the basis of which domain is affected by the asymmetry and how, but we need not discuss the types in more detail here.

One type of asymmetry is, however, especially relevant to the present discussion. Paradigmatic asymmetry whereby grammatical distinctions available in affirmatives are not available in negatives is rather common in the world's languages. In many languages, grammatical disctinctions, especially tense-aspect-mood distinctions, made in affirmatives are unavailable in negatives. One example of this can be seen in the Burmese examples in (12) above, where one form in the negative corresponds to three distinctions in the paradigm used in the affirmative.

One possible usage-based explanation for such paradigmatic neutralization can be cast in terms of typological markedness. In Section 3.1 we noted that the behavioural potential of marked categories is lower than that of unmarked ones. There are two aspects of behavioural potential: paradigmatic[5] potential and distributional potential. The lower paradigmatic potential of the marked category means that a lower number of paradigmatic distinctions are available in the marked category than in the unmarked one, and lower distributional potential means that the marked category can itself appear in a smaller number of contexts than the unmarked one. The paradigmatic potential of negation is lower than that of affirmation – we just saw that it is rather common in the world's languages that a smaller number of grammatical distinctions are made in the paradigm in the negative than in the affirmative. As for distributional potential, negatives cannot occur in all contexts in which affirmatives can, and languages may for example restrict the occurrence of negation in subordinate clauses. An economy-based explanation for the lower behavioural potential of the marked category refers to the lower frequency of the marked category: it is more economical to restrict the behavioural potential of the marked category, which is less frequent in discourse than its unmarked counterpart (see e.g. Haspelmath 2006). This is the general frequency explanation applicable to any markedness pattern where a clear difference in discourse frequency can be observed. We saw in 3.1 that there is evidence for the lower discourse frequency of negation vis-à-vis affirmation.

[5] Croft (2003: 294) uses the term inflectional potential but here we follow Miestamo 2007 in using the more general term paradigmatic potential.

The general frequency-based explanation for marked categories can play a partial role in explaining paradigmatic neutralization in negatives. However, as noted by Miestamo (2007), if the general frequency-based explanation was the whole story, then one would expect other marked categories, such as polar interrogatives, to exhibit similar tendencies for neutralization, but they turn out to show much less neutralization across languages than negatives do. A more negation-specific usage-based explanation for the paradigmatic asymmetry whereby grammatical distinctions available in affirmatives are not available in negatives has been proposed by Miestamo (2005). As noted by Givón (1978), negatives differ from affirmatives as to their discourse context. They typically occur in contexts where the corresponding affirmative, the content to be negated, is in some way present; either it has been explicitly uttered or there are other reasons why the speaker has reason to believe that the hearer might hold the negated content for true and therefore has a reason to negate it. Negation becomes relevant and informative in such a context. Imagine the following brief dialogue (13) about a potentially misbehaving dog.

(13) A: *Oh, King Arthur didn't bite anyone!*
B: *Erm... why... was he supposed to do that, does he usually bite people?*

If A produces such a negative out of the blue, without the idea of King Arthur biting people in the air, supposed in the context, B's reaction is likely to be puzzled as in the example. On the other hand, if A and B had earlier discussed King Arthur's tendency to go around biting people, A's utterance would be completely felicitous. The discourse context of negation is proposed as a motivation for the less specific marking of grammatical categories in negatives than in affirmatives. The idea behind this proposed motivation is that with the corresponding affirmative present in the context, all aspects of the negated situation/event need not be as specifically marked – there is less need to specify its temporal, aspectual or modal properties or its participants in the negative than in the affirmative – and in many languages, this discourse preference has grammaticalized as neutralization of grammatical distinctions in negatives. Such a discourse preference should be present in all languages while it has been conventionalized as grammatical constraints in some languages only. The discourse preference should show not only in the use of grammatical elements, but also in the use

of more lexical elements, e.g. as the lower degree of use of adverbials of time, place or manner and the lower degree of use of overt expressions of clausal participants such as subjects, objects and indirect objects.

In our ongoing work (Miestamo et al., in prep.), we have set out to test this hypothesis using corpus data. In our preliminary data from English conversations, negatives do indeed seem to show a lower number of spatial and temporal adverbials compared to affirmatives, while in manner adverbials there is no clear difference. For adverbials that express stance, the pattern is, however, reversed. Such differences related to types of adverbials show that in addition to the marked discourse context of negation, other factors such as verb semantics need to be taken into account in refining the hypotheses. For example, negation has a well-known tendency to appear with mental verbs (Biber et al. 1999: 174), which seldom have spatial specifications (Hasselgård 2010: 192).

Another cross-linguistically recurring asymmetry between affirmation and negation concerns the marking of NPs under negation (Miestamo 2014). In many Circum-Baltic languages (Finnic, Baltic, Slavic), NPs under the scope of negation are marked with a case that has partitive semantics, and in a number of languages across the world, e.g. many Bantu languages and many Oceanic languages, indefinite NPs under the scope of negation are marked as non-referential. Araki provides an illustrative example (14).

(14) Araki (Austronesian, Oceanic) (Alexandre François, p.c.)

a. *nam* *les-i-a* *jau* *lo* *leϋa*
1SG.R see-OBJ.REF-3SG coconut.crab LOC ground
'I've seen a/the coconut crab on the ground.'

b. *nam* *je* *les* *re* *jau* *lo* *leϋa*
1SG.R NEG see PAR coconut.crab LOC ground
'I haven't seen a/any coconut crab on the ground.'

c. *nam* *je* *les-i-a* *jau* *lo* *leϋa*
1SG.R NEG see-OBJ.REF-3SG coconut.crab LOC ground
'I haven't seen the coconut crab on the ground.'
[but not *'I haven't seen a coconut crab on the ground.']

In realis affirmatives (14a), objects appear as bare noun phrases and the verb has marking for referential object and person-number cross-reference. In the negative (14b), the

object is marked by the partitive marker *re* and there is no cross-reference on the verb. Referential marking and cross-reference on the verb may occur in negatives, but then the reading is definite (14c); in this case *re* does not occur. The partitive marker in Araki is essentially a marker of non-referentiality. Givón (1978) noted this phenomenon in a number of Bantu languages and proposed to explain it by the discourse properties of negation: negatives do not bring new referential participants into discourse; new participants are introduced in affirmative sentences and when they appear in negatives they are discourse-old and therefore definite (see also Sosa 2015 for some relevant discourse data on Eastern Khanty). Miestamo's (2014) survey of the marking of NPs under negation showed that grammaticalized effects of negation on the marking of NPs are not very common across languages, but they do occur in different parts of the world and the overall tendency is for (indefinite) NPs to be marked as non-referential under negation; the Circum-Baltic cases with partitive semantics can also be linked to non-referentiality as partitives, referring to masses, have a lower degree of individuation in their semantics. Givón's discourse explanation can be evoked for the overall typological tendency (see Miestamo 2014 for more discussion).

In Section 3, we have discussed a number of cross-linguistic generalizations regarding different aspects of negation for which usage-based explanations have been proposed in the literature. All these proposed explanations were distinctively pragmatic in nature, referring to discourse frequency and the discourse context of negation. In a usage-based view of grammar, all grammatical patterns emerge from discourse, even such where the ultimate reason is more semantic in nature. For example, the tendency of negation to receive irrealis mood marking in many languages is based on the semantic link between negation and irrealis (see Miestamo 2005: 208-209), but its conventionalization as a grammatical pattern in a language happens via recurring use in discourse. In this paper, we are mainly focusing on more pragmatically-based explanations.

4. Negation in clause combining

As noted above, the domain of negation can be divided into a number of typologically salient subdomains. Negation in clause combining is the main focus of our ongoing work, in which our goals are two-fold: on the one hand, to survey the cross-linguistic variation

that languages show in this subdomain of negation and to account for these typological findings from a usage-based perspective, and on the other hand, to use the domain as a case in a theoretical and methdological discussion of the relationship between cross-linguistic variation and discourse preferences. In this section, we will discuss the current state and the prospects of our research programme, presenting what is currently known about negation in clause combining from a typological perspective and discussing possible ways of applying usage-based explanations in this domain. As we will argue further below, negation in clause combining offers promising perspectives for such theoretical and methodological development.

Negation in clause combining has not received much attention in the typological literature. In general, the most studied phenomenon in this domain is Neg-Raising, or Neg-Transport, which specifially concerns complement clauses. Both terms are used to refer to the near equivalence of sentences like *I don't think that it happened* and *I think that it didn't happen* with negative marking in the main and the subordinate clause respectively (see, e.g., Fillmore 1963; Ross 1973; Bartsch 1973; Horn 1978a, 2001). However, despite the wealth of studies on Neg-Raising in individual languages, to our knowledge, no large-scale cross-linguistic work has been carried out on it. Bond (2011) provides a more general overview of negation in clause combining, both in subordination and coordination, focusing primarily on the locus of negation (where negation is formally marked) and the scope of negation. However, his paper is based on data from a few selected languages and, thus, is not itself a broad typological study of negation in clause combining, but rather provides methodological insights for further cross-linguistic investigations on the topic. Some other typological studies addressed negation in specific types of subordinate clauses, e.g. Schmidtke-Bode 2009 in purpose clauses, Hetterle 2015 in adverbial clauses, Shagal 2019 in participial relative clauses, and Mauri and Sansò 2019 in circumstantial clauses. Finally, Salaberri (in press) discusses the phenomenon of emphatic negative coordination (e.g. English *neither… nor*) across languages.

Although currently understudied, negation in clause combining clearly has a lot to offer to the general typology and our understanding of negation, as it often builds on the more familiar domains – such as standard negation and negative imperatives – but differs from them significantly in many respects. To the extent that negation in complex clauses is similar to negation in simple main clauses, we may expect that a lot of what was said about standard negation and its functional underpinnings in Section 3 is valid for

negation in complex clauses as well. However, our main interest is in how negation in complex clauses differs from main clause negation and how such differences can be accounted for in a usage-based perspective.

In general, negation in clause combining provides a substantial amount of previously neglected data that can shed light on the functioning of negation. Indeed, when the scope of research is expanded from a single clause to a combination of clauses, we encounter a number of new negative markers, negative structures, rules and tendencies related to negation. When we study a combination of clauses instead of a single clause, fundamentally new research questions also arise, e.g. those related to the scope of negation as an operator (see Bickel 2010: 58–60). Subordinate clauses can differ with respect to their function (complement clauses, adverbial clauses, relative clauses), syntactic relation to the main clause (embedded vs. non-embedded), degree of desententialization (from extremely finite to extremely non-finite), and a number of more fine-grained parameters, such as, for instance, semantics of individual clause types. All of these parameters may interact with negation in many complex ways, and investigating these ways can provide a perspective for a richer account of negation as a multifaceted phenomenon. In addition, when the focus of research is on negation in main clauses, different types are normally considered separately, such as negation of declarative verbal main clauses and negation of imperatives. However, if we consider clause combining, these different types can interact, for instance as alternative negators in certain types of subordinate clauses.

Clause combining seems like a promising direction in the research on negation in the usage-based perspective, as well. Importantly, a number of generalizations concerning negation outlined in Section 3 are also true of subordination and subordinate constructions. Similarly to negation, subordination is marked in the sense of Croft (2003). Verbs prototypically denote action and their basic pragmatic function is that of predication, but in the context of subordination they are often used for reference (e.g. in complement clauses) or modification (e.g. in relative clauses). Such a mismatch between semantics and pragmatics results in markedness, which manifests itself, among other things, in lack of verbal inflection, expression of nominal categories on verbs, or coding of arguments as nominal dependents, such as possessors or obliques; see Cristofaro 2003: 260–261. In addition, dependent situations in the context of subordination are often expressed by non-declarative clause structures, which are marked with respect to the

declarative ones: they are less frequent in discourse and display a reduced behavioural potential (i.e. occur in a limited number of different grammatical contexts, and show less distinctions in inflectional forms); see Cristofaro 2003: 58. A combination of subordination and negation is thereby situated at the intersection of two typologically marked phenomena, which may be expected to lead to effects worth investigating. The combination of two relatively infrequent phenomena can be expected to be rather rare in discourse, which offers a frequency based account for the high degree of markedness of negation in subordinate clauses. The occurrence of such a combination in discourse requires a particular pragmatic context. Discovering the contexts that favour the use of negative subordinate structures is an important step towards understanding the discourse basis of cross-linguistic variation in this domain and will therefore be one of the research foci in our project.

In what follows, we will address these issues in more concrete terms. The discussion will take up a number of cross-linguistically recurring structural properties of negation in complex clauses, drawing mainly from the data collected so far in our ongoing work but also from observations made in earlier literature. In connection with the structural properties discussed, we will address possible ways of getting at the usage-based underpinnings of the typological findings. Our preliminary survey of negation in subordinate clauses (Miestamo et al. 2019), based on a genealogically and areally stratified pilot sample of 50 languages, shows that in almost all languages standard negation can be used to negate subordinate clauses, or at least some types of subordinate clauses. For instance, in English, a negative main clause *He is not sleeping right now* can appear as a negative complement clause with no further adjustments: *I know that he is not sleeping right now*. On the other hand, there also exist many recurrent differences that negative subordinate clauses can show with respect to negative main clauses in various languages. The main differences observed so far will be discussed in the remainder of this section: different negative markers being used in dependent vs. main clauses, the position of negative markers differing in dependent vs. main clauses, paradigmatic asymmetries between negative and positive dependent clauses, differences in word order in negative vs. positive dependent clauses, fusion of negative markers with conjunctions, and the non-negatability of some types of dependent clauses.

To begin with, the negative marker used in subordinate clauses can differ from the negative marker used in main clauses. In some languages, specialized markers are used

in any kind of subordinate clauses, e.g. in Welsh (15), while in other languages their use might be restricted to specific types of forms, such as non-indicative or non-finite, e.g. in Lezgian (16). Some of such markers belong to the nominal rather than verbal domain, e.g. the abessive case marker in Udmurt (17), which signals desententialization of the subordinate clause (see Lehmann 1988). Moreover, there are also languages that can express negation in non-main clauses by means of specialized negative non-finite forms, which are not derived from the respective affirmative forms, e.g. in Kambaata (18).

(15) Welsh (Indo-European, Celtic) (Borsley et al. 2007: 263)

a. ***Nid*** *yw* *Gwyn* *yn* *darllen.*
NEG be.FUT.3SG Gwyn PROG read.INF
'Gwyn isn't reading.'

b. *Gwn* *i* [***nad*** *yw* *Gwyn* *yn* *darllen*].
know.FUT.1SG I **NEG** be.PRS.3SG gwyn PROG read.INF
'I know Gwyn isn't reading.'

(16) Lezgian (Nakh-Daghestanian, Lezgic) (Haspelmath 1993: 133, 127)

a. *gu-zwa*
give-IPFV
'he gives'

b. *gu-zwa-**č***
give-IPFV-**NEG**
'he does not give'

c. *fi-zwa-j*
go-IPFV-PTCP
'the one that goes'

d. ***te-**fi-zwa-j*
NEG-go-IPFV-PTCP
'the one that does not go'

(17) Udmurt (Uralic, Permic) (Edygarova 2015: 283, 278)

a. *tir-**tek***
hammer-**ABE**
'without a hammer'

b. *mi* *virʒili-**tek*** *puk-ko-m*
1PL stir-**ABE** sit-PRS-1PL
'We are sitting without stirring.'

(18) Kambaata (Afro-Asiatic, Highland East Cushitic) (Treis 2008: 171, 180)

a. [*cíil-at* ***it-tumb-úta***] *inchch-áta*
baby.girl-F.NOM **eat-3F.PTCP.NEG-F.ACC** food-F.ACC
'the food that the baby girl does not eat'

b. [*bux-íchch-u* ***it-anó***] *bar-í* *móoq-ut*
poor-SG-M.NOM **eat-3M.IPFV.PTCP** day-M.ACC spoon-F.NOM
ba'-áa'a
disappear-3F.IPFV
'On the day when a poor man has some food to eat his spoon can't be found.'

Relating such special markers of negation in subordinate clauses to possible explanatory factors, we may pay attention for example to a certain overlap between negation and subordination as regards the locus of coding. Cross-linguistically, subordination can be signalled by a number of different formal means including subordinating conjunctions, specialized pronominal elements, etc. However, one of the most common ways to encode subordination is the dependent clause predicate itself (as illustrated by but not limited to non-finite verb forms). That is, the locus of negation marking is often the same or close to the locus of subordination marking, which facilitates interaction between the two domains. Diachronically, this may contribute to the development of specialized negative dependent forms, which sometimes evolve from a combination of standard negators with markers of non-finite forms. Such a development has been reported in Aguaruna (Jivaroan), where the negative relativizer *-tʃau* is historically derived from a negator *-tʃa* and a relativizer *-u* but has developed enough idiosyncratic properties to be analyzed as an independent form (Overall 2007: 68).

Sometimes the special negators used in dependent clauses are not dedicated dependent-clause negators, but recruited from domains of main-clause negation other than standard negation. Such cases may pertain to a wider range of structures, or even to non-main clauses as a whole, while others are specific to particular types of subordinate clauses, such as the use of prohibitives in purposive clauses as shown in (19) from Jamsay Dogon.

(19) Jamsay Dogon (Dogon, Heath 2008: 640)
kònòŋó *kònòŋó* [*kó* *kûːⁿ*] *náːná-bà*
conical.roof make.roof NONH on put.on-IPFV-3PL.S

[*kó* *nò*] [*àrⁿá mìn-sà-Ø* *kâːⁿ*] ***sòjò-ý***
NONH now rain fall-RES-3SG.S even **leak-PROH**
'They build a conical roof and put it on top of it (=granary), so that it won't leak now even if the rain falls.'

Usage-based explanations of such specializations will pay attention to functional connections between the categories involved, e.g. purposives and prohibitives.

Some languages show differences in the placement of negative markers in dependent clauses as compared to their placement in main clauses. For example in Swedish, the negative marker occurs before the verb in dependent clauses while its default position is postverbal in main clauses. In Finnish, it is common that the negative auxiliary *e-* occurs early in the dependent clause, before the subject right after the subordinating conjunction, while its default position in main clauses is between the subject and the verb. One promising avenue of research will be to study systematically the difference in the position of negation markers in dependent vs. independent clauses, both across languages and in discourse data. This will allow us to see whether the tendency for negators in dependent clauses to appear earlier than in main clauses holds in a larger sample, to what extent discourse preferences reflect cross-linguistic variation, and what the effects of factors like NegFirst and MiD are on negation in dependent vs. independent clauses.

In some languages, we find cases where a negative construction used in some types of dependent clauses has a double marker of negation while main clauses use single negative markers, e.g. Fon (Atlantic-Congo: Kwa) and Kilmeri (Border) where double negation is found in conditional clauses. The opposite case – double negation in main clauses but single negation in subordinate clauses – has not been found in our data so far. This is interesting and somewhat counter to our expectations, as it has earlier been observed that double negation, when arising via a Jespersen Cycle, is likely to appear in main clauses first and spread to subordinate clauses later (see Hansen and Visconti 2009). In any case, more languages need to be surveyed to see whether this really is a cross-linguistically recurring phenomenon.

In addition to the differences in the form, position and number of the negative markers themselves, negative subordinate clauses show other peculiarities with respect to positive subordinate clauses and negation in main clauses. In particular, specialized negative non-

finite forms can demonstrate various types of asymmetries pertaining to different categories that may not be relevant for standard negation; see Shagal 2019: 178–183 for an overview of this phenomenon in participles. For example, as shown in Table 2, Finnish has five affirmative participles, which differ both in their relativizing capacity (whether they relativize subjects or direct objects) and in their temporal meaning (present vs. past). The single negative participle, on the other hand, can not only act as a negative counterpart for all the affirmative forms, but is also able to relativize some non-core participants, such as locative or temporal adverbials (Shagal 2019: 94–95). As mentioned earlier, asymmetries in TAM are attested in standard negation as well, but the loss of distinctions in relativizing capacity is specific to relative clauses and, therefore, cannot be discovered if we consider clauses in isolation.

<table>
<tr><td rowspan="2"></td><td rowspan="2">Temporal reference</td><td rowspan="2">Subject-oriented</td><td colspan="2">Direct object-oriented</td></tr>
<tr><td>Agent not expressed</td><td>Agent expressed</td></tr>
<tr><td rowspan="2">Affirmative</td><td>Present</td><td>-va</td><td>-tava</td><td rowspan="2">-ma</td></tr>
<tr><td>Past</td><td>-nut</td><td>-tu</td></tr>
<tr><td rowspan="2">Negative</td><td>Present</td><td colspan="3" rowspan="2">-maton</td></tr>
<tr><td>Past</td></tr>
</table>

Table 2. Participial paradigm in Finnish

Discourse-based explanations for such paradigmatic asymmetries between negative and positive dependent clauses may be proposed along the same lines as for similar asymmetries between negative and affirmative main clauses, referring to the discourse context of negation and frequency. More specific hypotheses need to be formulated and tested in discourse data. Attention will be paid for example to the type of subordinate clause: whether specialized negative participles, negative converbs and negative nominalizations behave the same way in terms of neutralization, whether explanations can be found in some discourse properties of relative, adverbial, and complement clauses, respectively, and whether the degree of nominalization/desententialization plays a role.

Furthermore, it is interesting to note that subordinate clauses (and, more generally, clauses in the situation of clause combining) show asymmetries vis-à-vis independent clauses very similar to those found between negatives and affirmatives. For instance, verb forms that are typically used in dependent clauses are often not inflected for the

same categories as verbs in independent clauses, e.g. tense, aspect, mood, or person. And even if they are inflected for the same categories, they commonly display a reduced set of internal distinctions (see Cristofaro 2003: 57). As discussed in Section 3.4, a possible explanation for such paradigmatic asymmetries in negation is that in order for a negative utterance to make sense, a corresponding affirmative utterance needs to be somehow present in the background, either explicitly or implicitly. In a similar way, subordinate clauses often depend on main clauses in the interpretation of the verbal categories, such as tense, and participants of the situation. In other words, underspecification of various properties of the situation is characteristic of both negation and subordination, so this is yet another aspect in which a more detailed understanding of the specific discourse contexts of negative subordinate clauses can provide insights into cross-linguistic variation in structural patterns.

Other ways in which negative subordinate clauses may differ from negative main clauses include changes in word order patterns. For example Basque shows more flexibility in subordinate clauses as opposed to main clauses (Hualde & Ortiz de Urbina 2003: 523). Salaberri (2021) provides a diachronic account of this difference, making also a connection to the pragmatic backgroundedness of subordinate clauses. Information structure is one further parameter to be taken into account in examining the discourse properties of negative main vs. subordinate clauses.

Negators in dependent clauses have also been observed to fuse with other elements. Apart from dependent verb forms (as in the case of Aguaruna discussed above), this can also concern subordinating conjunctions. In Finnish, it is common that the negative auxiliary *e-* occurs right after the conjunction and fuses with it, e.g. *että* 'that' + *et* NEG.2SG > *ettet* 'that you don't'; *jos* 'if' + *et* NEG.2SG > *jollet* 'if you don't'. Here we may pay attention to possible typology-discourse correlations with respect to how frequent it is for different dependent clause types to be negated, expecting more fusion and even specialized negative conjunctions (such as *lest* and *unless* in English) in clause types that more commonly occur with negation (e.g. complements, conditional clauses) than some other clause types do.

Finally, an important phenomenon observed for some subordinate structures is their inability to be independently negated. This is often considered a result

of desententialization (see Lehmann 1988: for an example from Popti',[6] Mayan, and general discussion), and, therefore, is yet another effect that can only be properly investigated in the context of clause combining. Relatedly, Horn (1978b: 191) refers to 'a constraint against negation in non-finite embedded clauses'; an example is the relative strangeness of sentences like *I want not to work* compared to *I don't want to work* (Givón 1978: 95). Correlating such discourse preferences, e.g. in English, with more grammaticalized restrictions in cases like Popti' and Finnish will shed light on the relationship between cross-linguistic variation and variation in discourse and provide potential usage-based explanations for the cross-linguistic variation.

5. Conclusion

In this paper, we have laid out the theoretical and methodological foundations of a research project that addresses negation in clause combining in a typological and usage-based perspective, illustrating the discussion with empirical data coming mainly from our ongoing work. We hope to have shown that negation lends itself particularly well to examining the relationship between cross-linguistic variation and discourse preferences through empirical work and that it therefore provides an excellent testing ground for the more general theoretical questions in the focus of our project. First of all, it is a highly frequent and easily identifiable element in usage data, which is an obvious methodological advantage. Negation is universally present in languages and negative constructions can be identified across languages without problems. Negation, while having a relatively simple semantic core, has its own special pragmatic properties, which leads to a variety of discourse effects that we can try to relate to cross-linguistic patterns. We have further argued that negation in the context of clause combining provides particularly interesting perspectives into usage-based explanations of cross-linguistic patterns as the combination of these two domains is expected to create specific discourse conditions that may affect linguistic structure in various ways. Uncovering these factors is a central theme in our subsequent work, which will consist of the following main components: We will address and evaluate discourse-based explanations of typological

[6] Referred to as Jacaltec in Lehmann 1988.

patterns in the domain of standard negation. We will survey cross-linguistic structural variation in the domain of negation in clause combining and try to account for it in a usage-based perspective. Our work on the discourse factors relevant in explaining cross-linguistic variation in negation will then, hopefully, feed back to the more general theoretical-methodological discussion of the relationship between typology and language use.

As is obvious from the discussion in the preceding sections, we are by no means the first ones to propose the idea that explanations for cross-linguistic variation can be found in language use. However, usage-based explanations proposed by typologists are rarely backed up with concrete studies of usage, but rather proposed as hypotheses that remain to be tested. In our work, we will put the proposed explanations to test using empirical discourse data. Looking at negation in discourse, we will first ask how frequent selected properties of negation are and in which ways they are conditioned by other discourse preferences. This will lead to the further question to what extent these discourse preferences correlate with cross-linguistic preferences and to what extent we can use the discourse preferences to account for cross-linguistic variation. And ultimately, we will be in a position to estimate whether these observations give support to the PGCH, for example, and whether they are in line with similar observations in other domains beyond negation. Examining negation across languages and within discourse will allow us to gain new insights into the question why grammar is shaped the way it is.

Abbreviations

1	first person
2	second person
3	third person
ABE	abessive
ACC	accusative
ACT	actual
AFF	affirmative
CNG	connegative
F	feminine

FOC focus
FUT future
IMPF imperfect
INF infinitive
IPFV imperfective
LOC locative
M masculine
NEG negative
NOM nominative
NONH nonhuman
OBJ object
PAR partitive
PERF perfect
PL plural
POT potential
PROG progressive
PROH prohibitive
PRS present
PTCP participle
R realis
REF referential
RES resultative
S subject
SG singular

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