Two types of negation: semantics, distribution and history
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1. Introduction

Throughout the 20th century, there has been ongoing discussion about the nature of negation and whether it can be viewed as a unified phenomenon. Two main approaches have emerged: the *monoguist* and the *ambiguist* approaches (as per Horn's terminology; Horn 1985; 2001). Advocates of the *monoguist* approach contend that all instances of negation can be encapsulated by a single fundamental semantics. They argue that negation in natural languages can be comprehensively represented by the negation connective in standard logic. In contrast, proponents of the *ambiguist* approach argue that negation is a multifaceted phenomenon, taking on varying semantic or pragmatic meanings in different contexts. These distinct meanings may involve different logical connectives, with different truth tables (i.a., Bochvar and Bergmann 1981 [Bochvar 1938]), or different semantic and pragmatic functions expressed by the same morphological form (e.g., Karttunen and Peters 1979; Ladusaw 1980).

In this paper, I argue in favor of the *ambiguist* approach, suggesting that there are two types of negation: *internal* and *external*. The distinction between these two types arises from the fact that a proposition can be negated in at least two ways: externally, by stating in the main clause of a biclausal structure that the proposition in the embedded clause is false (1a); or internally, by negating the predicate in a monoclausal structure (1b).

(1) a. It is not true that the king of France is bald.

    b. The king of France is not bald.

While, according to the standard approach, these two structures can be represented formally with the same logical connective, their truth-conditional semantics may not always be the same, as Section 4 will demonstrate. Furthermore, only (1b) can be considered negative with respect to not allowing Positive Polarity Items (PPIs). However, this dichotomy is not always determined by whether the syntactic structure used to express the negation is mono- or biclausal. There are certain well-defined environments of monoclausal negative statements that, despite being syntactically internally negated, still behave similarly to externally negated statements, both in terms of their interaction with PPIs and their semantic interpretations. Interestingly, in some languages, the form of the negator in such cases is different, and in other languages, the syntax of negative statements in these environments is marked.

These observations suggest that the same type of negation does not underlie the two sentences in (1a) and (1b). These two distinct types of negation are also evident in various other linguistic contexts. Accordingly, the negation found in (1a) and (1b) aligns with different types, and each type of negation appears in distinct semantic and syntactic environments.

Furthermore, my intention is to assert that there are two languages in which a distinct linguistic form is utilized for each specific type of negative statement. Notably, the form linked to the category of external negation can be traced back historically to the expression used in the biclausal structure, which represents genuine external negation.

Taken together, these observations support the argument that explicit biclausal external negation (1a) is one case of a *type of negation* that can also be expressed in a monoclausal structure. This perspective provides novel support for the ambiguist approach to negation, synthesizing four distinct lines of evidence from a variety of languages:

- Environments in English where *some*-PPIs can operate under the scope of negation (Section 2)
- The functional distribution of "light negation" in German (Section 3)
- Environments where cross-linguistically a wide-scope reading of negation is the only available interpretation (Section 4)
- The origin and the functional distribution of two negators in Jewish Babylonian Aramaic (JBA) and in the Sicilian dialect of Mussomeli (Section 5)

Given the existence of specific contexts in which all four of the previously mentioned phenomena manifest in ways similar to external negation, it is advantageous to reflect on them together. Furthermore, it will be insightful if one could find a factor that can account for the similar behavior between those four phenomena and external negation, and therefore this examination will culminate in a proposal for distinguishing between the two types of negation (Section 6). Section 7 will provide a novel account of the interaction between negative expressions and PPIs.

Ultimately, this paper presents fundamental distinctions between two types of negation: NEG_1 and NEG_2. These two types of negation exhibit significant disparities in their semantic functions and the nature of information they convey:

- NEG_1 (internal negation) centers on the "topic" within a clause, imparting negative information regarding the quality of that topic. It entails a transformation from one predicate to its antithesis and is characterized by the semantic type <<e,t>,<e,t>>.
- NEG_2 (external negation), in contrast, negates the truth value of the root proposition (the positive proposition without the negation). NEG_2 does not offer

specific information about individuals but rather operates on the truth value of another statement, signifying that it does not hold true. Functioning as a truth function of type <t, t>, NEG_2 reflects the principle of contradictory opposition between propositions.

These distinctions between NEG_1 and NEG_2, both in terms of the information they convey and their semantic roles, are a central focus of the investigation of negation in this paper.

   Section 8 will aim to characterize the environments in which NEG_2 is mandatory. This study is especially pertinent in the context of the current volume, which is dedicated to exploring theoretical and empirical perspectives on language change. Section 5's examination of the two negators in both JBA and the Sicilian dialect of Mussomeli delves into their historical evolution, which I will contend bears relevance to a synchronic semantic analysis. Hence, in the concluding remarks of this paper (Section 9), I will also briefly touch upon the interplay between formal semantics and historical linguistics. Furthermore, I will discuss the methodological insights that can be gleaned from the present study. It is my hope that this paper further illustrates the significance of historical linguistics in formal studies of natural language semantics.

2. Interaction between negation and some-PPIs in English

Positive polarity items (PPIs) are generally understood to be linguistic expressions that are unable to take scope below negation:

(2) a. They didn't find some typos.   some > NEG   *NEG > some

     b. No one will find some of these typos.   some > no one   *no one > some

     c. They will never find some of these typos   some > never   *never > some

In other words, the existential quantification expressed by *some* is never negated. Thus, the sentence in (2a), for example, can only be interpreted as "**there are some typos** that they didn't find" but not as "there are no typos they found/ they found **no typos**."

   However, in certain contexts, *some*-PPIs can scope below negation as well. For example, the sentence in (3) can be interpreted as "there is no one who didn't find any typos" or "there are some typos that everyone found."

(3)   There is no one here who didn't find some typos.   some > NEG   NEG > some

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In most approaches, *some*-type expressions are PPIs,[1] and there are different theories of how to account for the fact that, in certain contexts, *some*- PPIs can operate under the scope of negation. One approach is to assume that PPIs are only **licensed** in certain environments, rather than assuming that they cannot operate under the scope of negation in general (Szabolcsi 2004; Homer 2020, among others). Accordingly, a theory must identify the characteristics of environments that license these expressions. For example, Szabolcsi (2004) argues that PPIs cannot appear in the immediate scope of a clausemate antiadditive operator unless this operator is in an NPI-licensing context, as is the case in (4).

(4)   I am surprised that they didn't find some typos.   NEG > some

It is important to note that this hypothesis can explain all cases in which, as in (3), a sentence with negation takes scope under another negative operator.

Another approach is to assume that, although PPIs are unable to function under negation, there are certain environments in which they can still be **rescued**, even if they operate under the scope of negation. For instance, Baker (1970) argues that rescuing PPIs is often correlated with the presence of a counterfactual implication, as shown in the three sentences in (5).

(5)   a.   If they had not found some typos, they would have been happy. NEG > some

       b.   I wish they hadn't found some typos in the manuscript.   NEG > some

       c.   I am surprised that they didn't find some typos.   NEG > some

Given the fact that in specific instances, certain types of PPIs are incapable of appearing within the scope of negation, while in other cases, they can, an alternative viewpoint is championed by Ladusaw (1980), who introduces the idea that the negator *not* is lexically ambiguous. According to him, this ambiguity gives rise to two homophonous negation morphemes: *not$_1$* and *not$_2$*. Notably, *not$_2$* surfaces exclusively in denials. In denials, according

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[1] According to Krifka (1995), *some*-type expressions are not PPIs as they do not introduce alternatives or induce alternative-related implicatures. He contends that the scope differences observed in cases like "Mary didn't see anyone" and "Mary didn't see someone" are a result of Grice's principle of ambiguity avoidance rather than the polarity status of "someone." Krifka even suggests that this paradigmatic effect may be so robust that it is virtually grammaticalized. However, Krifka's account does not explain why these scope differences are apparent in certain contexts but not in others.

to Ladusaw, **it is stated as ~*p*, but there exists a belief or expectation that *p* holds true.** The distinction between these two negators is that *not₁* functions within "assertion of negation" contexts, whereas *not₂* emerges in "negation of assertion" contexts. It is important to stress that the concept of denial is utilized in a constrained manner here (and throughout the paper), where it refers to asserting the falseness of the proposition *p* and does not encompass the broader notion of rejecting a previously accepted utterance.[2]

These two negators, according to Ladusaw (1980), interact with *some*-PPIs in contrasting ways. *Not₁*, the regular negator, serves as an anti-licenser for PPIs (6), while *not₂* is not an anti-licenser for PPIs.

(6)   They didn't₁ find some typos.   some > NEG   *NEG > some

Notably, *not₂* is utilized within denials, which leads to its occurrence in scenarios involving negative polar questions, which usually have a negative response bias. This pattern similarly extends to rhetorical questions (7a), where the negation implies an opposing reality, as is evident in (7b) when the opposite outcome is anticipated.

(7)   a.   Didn't₂ they find some typos?   NEG > some

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[2] The term "denial" is widely used in the literature with a broad connotation of objecting to a previous utterance. According to van der Sandt (1991), it involves the removal of (part of) previously introduced content from the common ground and executes a corrective operation on contextual information. Operating as a speech act, a denial can target diverse aspects of a prior utterance, including presuppositions, implicatures, or formal elements like pronunciation. The negation of these non-propositional components within an utterance has been referred to as metalinguistic negation by Horn (1985, 2001).

Various analyses followed Horn and advocate for a unified approach, asserting that denial is a homogeneous phenomenon warranting a consolidated analysis. For instance, van der Sandt (1991) proposes an echo operator that considers the cumulative information from a previous utterance ø-1—encompassing presuppositions, implicatures, etc.—as the propositional content of the utterance ø-0, subsequently eliminating ø-1 from the context. However, Geurts (1998) offers an alternative perspective, suggesting the existence of several mechanisms of denial (Repp 2009, Chapter 4 provides a literature overview on this topic).

In this stage of our paper, "denial" is employed descriptively, specifically limited to capture cases of proposition denial and presupposition denial, as defined in Geurts' (1998) terminology. As will become evident, given that our analysis considers these instances as instances of a semantic negation type, and not all denials or metalinguistic negations align with this type of negation, we ultimately adopt a non-unitary approach to denial (in the broad sense of the term).

   b. I am <u>surprised</u> that they didn't$_2$ find some typos.   NEG > some

In Ladusaw's analysis (1980, 180), the phenomenon of anti-licensing seems to lack a discernible rationale. This assessment stems from the observation that environments where negation (*not$_1$*) acts as an anti-licenser occur when the negator takes precedence over PPIs, implying potential difficulties in scoping over these expressions with negation. However, Ladusaw contends that *not$_2$* is specifically employed within the semantic context of denial and curiously, denials inherently involve a broad scope. Thus, only the fact that *not$_2$* is associated with denials fails to elucidate the inherent differences in their interaction with PPIs. Accordingly, the manner in which these two negations interact in terms of scope appears initially to be unmotivated, if not arbitrary.

 Each of the proposed explanations of where negation can take scope over a *some*-PPI must contend with distinct empirical challenges. It is unclear in what sense cases like (3) or (5a) fall under the category of denial, challenging Ladusaw's stance. Similarly, Baker's (1970) proposal encounters difficulty, as there is no counterfactuality in sentences like (3). Szabolcsi's approach, which revolves around the concept of licensing environments, faces several empirical issues, some of which will be extensively discussed in Section 8.

 To round out the discussion, Karttunen and Peters (1979, 47) note that in contexts where presuppositions do not arise in the presence of negation, PPIs can function within the scope of negation, as illustrated by the following example:

 (8) It is not the case that they found some typos.

Crucially, (8) is a case of external negation, the type in which PPIs *can* appear under the scope of negation. Some scholars have taken such cases as prototypical for cases where negation can scope over existential quantification expressed by PPIs like *some*. Larrivée (2012) argues, for example, that although in general negation cannot scope over *some*-PPIs, it can do so when a proposition is already activated (already accessible to the hearer) and only then negated, as in external negation, where the PPI is "shielded" (cf. Atlas 2012). The reason that PPIs can be "rescued" in these environments is that the root (positive) proposition is copied with its original PPI and then externally negated, reversing its truth value. Larrivée's approach distinguishes between the types of negation at the discourse level —between cases where the negation operates on activated propositions and cases where it operates on non-activated proposition (cf. Repp 2009, chap. 4). It is unclear, however, whether a sentence such as (3) can be expressed only if the root proposition is already discursively activated.

While my intention was not to offer an exhaustive review of the discussions in the literature regarding the interaction between *some*-PPIs and the scope of negation, I would like to highlight two points from this discussion. First, it is important to note that there are several environments where PPIs can operate within the scope of negation, including the following:

In counterfactuals (especially in antecedents of counterfactual condition)	✓
In negative polar question/ rhetorical questions	✓
In context of denials	✓
In the scope of external negation (It is not the case that...)	✓
In the context of an NPI licenser	✓

Table 1: first summary of the data

Second, approaches such as Ladusaw (1980) and Larrivée (2012) de facto propose *ambiguist* approaches to negation by arguing that English has two types of negators with different semantic content, expressed homophonically. Similarly, Schwarz and Bhatt (2006) also indirectly addressed the debate between *monoguist* and *ambiguist* approaches in the context of PPI anti-licensing. Although this debate was not their research question, it is worth considering their findings from this perspective. In the following section, I introduce their observations on this topic.

3. "Light negation" in German

Schwarz (2004) and Schwarz and Bhatt (Schwarz and Bhatt 2006) adopt Ladusaw's position that natural languages have two types of negation. We will use NEG_1 and NEG_2 to mark the two types. They argue that German provides a syntactic disambiguation between the two types of negation. While NEG_1 functions as an anti-licenser, NEG_2, which they term "light negation," does not. The key difference between the two types of negation is the position of the negator *nicht*. In particular, *nicht* is not typically located at the left edge of the verb phrase, especially when it immediately precedes a noun phrase. As an illustration, the negation of sentence (9a) would not be (9b) but rather (9c), where *nicht* appears next to the verb:

(9)   a.   Fritz hat   Frage   3   beantwortet.

           Fritz has   question 3   answered

           'Fritz answered question 3.'

      b.   *Fritz hat nicht Frage   3 beantwortet.

           Fritz has not   question 3 answered

      c.   Fritz hat   Frage   3   nicht beantwortet.

           Fritz has   question 3   not   answered

           'Fritz didn't answer question 3.'

In certain environments, however, the constraints on the location of the negator *nicht* disappear, and it is positioned at the left edge of the verb phrase. For instance, in negative polar questions, negation can immediately precede an indefinite noun phrase (Meibauer 1990; Büring and Gunlogson 2000; Romero and Han 2004):

(10)   Hat Fritz nicht Frage 3 beantwortet?

       have.PST Fritz not question 3 answered?

       Didn't Fritz answer question 3

Similarly, in the antecedent of a subjunctive conditional (Meibauer 1990, 449), Schwarz (2004) and Schwarz and Bhatt (2006) show that *nicht* may only appear at the left edge of the verb phrase when there is a counterfactual interpretation of the conditional:

(11)   Wenn Fritz nicht Frage   3 beantwortet hätte,   wäre   er durchgefallen.

       If   Fritz not   question 3 answered   have.SUBJ be.SUBJ he Failed

'If Fritz hadn't answered question 3, he would have failed.'

In the same way, in the scope of the verb *überraschen* "surprise" (12a), in the context of an NPI licenser (12b), and when denying a previous statement with a *verum* focus (12c), the negator *nicht* appear at the left edge of the verb:

(12) a. Wir waren überrascht, dass Fritz nicht Frage 3 Beantwortet hat.

we were surprised that Fritz not question 3 Answered, has

'We were surprised that Fritz didn't answer question 3.'

b. Wir haben keinen angenommen, der nicht Frage 3 beantwortet hat.

we have no one admitted who not question 3 answered has

'We admitted no one who did not answer question 3.'

c. Fritz hat **nicht** Frage 3 beantwortet.

Fritz has not question 3 answered

'Fritz DID NOT answer question 3.'

Schwarz (2004) and Schwarz and Bhatt (2006) thus show that the set of contexts where "light negation" appears in German is essentially the same as the set of positive polarity "rescuing" contexts in English (cf. Zeijlstra 2012, for different analysis of so-called light negation), as summarized in the next table:

	neg > *some* in English	Light negation in German
In counterfactuals (especially in antecedents of counterfactual condition)	✓	✓
In negative polar question/ rhetorical questions	✓	✓
In context of denials	✓	✓
In environments in which presuppositions are not projected under negation (It is not the case that...)	✓	N.A.[3]
In the context of an NPI licenser	✓	✓

Table 2 Second summary of the data

For our purposes, Schwarz and Bhatt (2006) provide additional evidence for an ambiguist approach, which posits the existence of more than one type of negation. However, they did not explain why the environments in which light negation appears in German are the same as those in which PPIs are rescued in English.

In addition, a major issue with this approach is its assumption of homophony between the two types of negation across all languages, which lacks a certain degree of appeal (cf. Gazdar 1979). To address this concern, Section 5 discusses data from Jewish Babylonian Aramaic (JBA) and Sicilian. These data reveal that at least two languages employ separate forms for the two types of negation in the same specified contexts (summarized in Table 2).

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[3] It is not applicable, as there is no interaction between negation and definite/indefinite phrases in cases of external negation.

In the meantime, the following section demonstrates that these contexts are also correlated with distinct interpretations of negative statements.

4. Environment-Dependent Interpretations of Negation

This section delves into two potential interpretations linked with negative statements and illustrates how their distribution aligns with the contexts associated with the phenomena discussed above. Consider the data presenting in (13):

(13) a. Mike answered three questions out of ten.　　　(n=3)

　　　b. It is not the case that Mike answered three questions out of ten.　　(n≠3 preferred: <u>n<3</u>)

　　　c. Mike did not answer three questions out of ten.　(preferred: <u>n≤7</u> or n≠3 [in this case the preferred option is: <u>n<3</u>])

(In the brackets, *n* indicates the number of answers that are required for the sentence to be true.)

In a positive sentence like (13a), the assertion is that Mike answered 3 out of 10 questions. When negating the root proposition in (13a), it is asserted that the statement is false. This is exemplified in (13b), which serves as an instance of explicit external negation. The sentence in (13b) unequivocally conveys that the assertion of 3 questions being answered is not true. To put it differently, it asserts that Mike answered a number of questions other than 3. This often implies that he actually answered fewer.[4]

In contrast, the typical interpretation of (13c) exemplifies standard negation. This sentence holds multiple readings. Among these, the most prominent one deviates from the interpretation conveyed by external negation. Instead of merely stating the falseness of the root proposition in (13a), it addresses the number of unanswered questions—i.e. "there are three questions out of ten that Mike did not answer." For (13c) to be true, it must hold that at most 7 questions were answered. Alternatively, in specific contexts, (13c) can be also

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[4] The current paper does not delve into the task of explaining the preferences among the different potential interpretations. Our primary focus has been to address the foundational question of what underlies these diverse interpretations. For a review of the literature on the interaction between cardinal numbers and negation, and especially whether negation interacts with the lower bound or the upper bound of the number word, see Solt and Waldon (2019).

interpreted in a manner akin to external negation, implying the falsehood of the root proposition in (13a). Once again, the preferred interpretation usually suggests that Mike answered fewer than 3 questions.

Interestingly the same verb phrase (with internal negation) in environments where *some*-PPIs are not anti-licensed (as discussed in Section 2), as shown in (14), result in an "external negation" interpretation similar to that of (13b). In other words, the examples in (14b-e) are about whether it is true that 3 questions were answered and not about how many questions were left unanswered.

(14) a. Mike didn't answer three questions out of ten. $(n≤7$ or $n≠3)$

b. There is no one here who didn't answer three questions out of ten. $(n>3)$

c. I am surprised that they didn't answer three questions out of ten. $(n<3/ n≤7)$

d. If Mike had not answered three questions out of ten, he would $(n>3)$
   have failed the exam.

e. Didn't he answer three questions out of ten?! $(n=3)$

Interestingly, with double negation there is only one "internal negation" interpretation:

(15) He did not not answer three questions out of ten. $(n>7)$

In (15) the "internal" negation has only a narrow-scope interpretation $(n≤7)$, whereas the "external" negation indicates that the statement is false $(n>7)$, implying that there must be more questions that were answered. In the next section, the data from Jewish Babylonian Aramaic indicate that cases of double negation involve two types of negators.

The data presented in (14) suggest that negation in these environments is inherently interpreted similarly to external negation (as exemplified in (13b)) with a wide scope reading. Moreover, since these are the environments where PPIs can be interpreted under the scope of negation, I would like to consider the possibility that the type of negation is the factor that determines the availability of scopal relations between the logical operators.

Finally, it is worth mentioning that Schwarz and Bhatt (2006) also observed that cases of light negation in German have syntactic features of a wide scope structure and these are the same environments in which all the above-mentioned phenomena occur. This observation may also suggest that the nature of negation differs in all of these environments.

To conclude, in certain environments, PPIs are not anti-licensed in English, and German exhibits light negation. In these environments, a wide scope reading similar to that of external negation is mandatory:

	neg > *some* in English	Light negation in German	Interpreted similar to external negation
In counterfactuals (especially in antecedents of counterfactual condition)	✓	✓	✓
In negative polar question/ rhetorical questions	✓	✓	✓
In context of denials	✓	✓	✓
In environments in which presuppositions are not projected under negation (It is not the case that...)	✓	N.A.	✓
In the context of an NPI licenser	✓	✓	To be discussed in Section 8
The external negation in double negation	N.A	N.A	✓

Table 3 Third summary of the data

The connection between the semantics of explicit external negation and the negation found in specific well-defined contexts becomes particularly intriguing when considering that in two languages, we discover the presence of a dedicated negator tailored for these contexts. Notably, this negator has a historical origin stemming from diverse components within a biclausal external negation structure, which is the topic of our next section.

5. Two cases of transparent morphology: origin, distribution and semantics

The data mentioned so far, derived from both syntactic and semantic phenomena, indicate the existence of two distinct types of negation. Building upon these insights, Ladusaw (1980) and other researchers have proposed an *ambiguist* approach to negation. According to this viewpoint, natural languages incorporate two negators. However, this approach faces a notable challenge—its presupposition of homophony between the two negation types across all languages. In response, the focus in this section shifts to the data from Jewish Babylonian Aramaic (JBA) and Sicilian. Here, it is argued that these languages employ separate forms for the two negation types within the specified contexts.

Furthermore, I endeavor to trace the historical roots of the negator that semantically aligns with external negation. In the case of these two languages, these negators are historically derived from biclausal external negation, which conveyed explicit external negation ("it is not the case that…").

The historical evolution of these negators and their distinct syntax will be discussed first. Subsequently, evidence will be presented to show that the two negators appear in contexts parallel to those in which they appeared in earlier sections. This offers an intriguing instance wherein historical analysis significantly contributes to our synchronic examination.

JBA will be discussed first. This dialect of Late Eastern Aramaic employs two negators: *lā* and *lāw.* Bar-Asher Siegal (2015; 2017) delves into the origins of these negators, highlighting the syntactic distinctions between them and emphasizing *lāw*'s specific contextual restrictions. In the subsequent discussion, I will begin by summarizing these studies and illustrate the parallels between JBA's distributional patterns and the observations presented earlier in this paper. I will also discuss an analogous phenomenon, previously noted by Bar-Asher Siegal and De Clercq (2019), in the Sicilian dialect of Mussomeli.

5.1 lāw in JBA
5.1.1 Origin
The form *lāw* is the result of a phonological univerbation of two independent morphemes: *lā+hu*—the regular negator (*lā*) merged with the agreement clitic (*–hu*, 3rd person singular; cf. Doron 1986). In fact, *lāw* on its own is a complete sentence:

(16)   lā=w

             NEG=3.M.SG

             'It is not the case.' lit. '[it] is not it.'

In Syriac, another Eastern Late Aramaic dialect that usually displays older stages in the history of these dialects, *lāw* also appears but only in cleft sentences as a negation of the matrix clause (Joosten 1992; Pat-El 2006). As demonstrated by Bar-Asher Siegal and De Clercq (2019), support for this analysis of the Syriac data comes from (17). Only when the main clause lacks the verb *hwy* "to be," as in (17a), can *lā* and *-hu* merge and be pronounced as *lāw*. If the verb is present in the main clause, such as in the past tense (see Goldenberg 1983), as in (17b), the contraction cannot take place and the original negator *lā* remains.

(17) a. lā=w   ḥīm   'ītaw=y wa

         NEG=3.M.SG   PN   exist.3.M.SG=be.PST.3.M.SG

         'It was not PN (lit. it is not the case that it was PN)'

         (Ephrem, Genesis 64, Pat-El 2006, ex. 18)

     b. lā=wā   men   'ūlṣānā=hu

         NEG=be.PST.3.M.SG   from   coercive=3.M.SG

         'It was not out of coercion (lit. it is not the case that it was out of coercion)'

         (Ephrem, Genesis 30, Pat-El 2006, ex. 17)

This function was still operational in JBA in negative replies to questions (18a) and in cleft sentences (18b), where it demonstrates cases of explicit external negation ("It is not the case that…").

(18) a. 'mar   l-eh   'it   l-āk   nikse

15

say.PST.3.M.SG to-3.M.SG exist to-2M.SG property

b-qapputqāyā 'mar l-eh lā-w

in-GN say.PST.3.M.Sg to-3.M.SG neg-3.M.SG

'He said to him, "Do you have property in gn?" He replied, "No."' (Ber. 56b)

b. lā-w d-mbarrek 'l-eh

NEG-3.M.SG REL-bless.PTCP.3.M.SG on-3.M.G

w-šāte l-eh

and-drink.PTCP.3.M.SG to-3.M.SG

'Is this not the case where he recites a blessing upon it and drinks it? (Ber. 52a)

5.1.2 Development in JBA

Over the course of the diachronic development of JBA, *lāw* has become an independent morpheme that functions as a simple negator in most syntactic contexts. Unlike in Syriac, the element following *lāw* in JBA does not necessarily constitute an independent clause. For instance, the adverb *hāke* 'such/so' follows the negator *lāw* in (19a), a common phrase in JBA. This indicates that what comes after *lāw* need not necessarily be an independent clause and makes it clear that this is not a cleft sentence, either. The negator *lāw*, which usually appears in clause-initial position, can co-occur with a copular verb that has pronominal agreement (19b), the verb 'to be' (19c), a feminine copula (19d), or the regular negator *lā*, as in (19e).

(19) a. hā lāw hāke

DEM.F.SG NEG so

'[In fact] it is not so.' (among others, Menaḥ. 55b)

b. lāw   gazlān-e   ninhu

   NEG   thief-PL   COP.3.M.PL

   'They are not thieves.' (B. Qam. 79b)

c. lāw   'isurā   hawya

   NEG   prohibition   be.PST.3.F.SG

   'It was not a prohibition.' (Yebam. 13b)

d. lāw   miltā   hi

   NEG   thing   COP. 3.F.SG

   'It is not something (significant)' (Sanh. 47b)

e. lāw   lā   šənā

   NEG   NEG   different.M.SG

   'Isn't it the case that it doesn't matter?!' (Šab 112b)

Furthermore, Bar-Asher Siegal (2015, 1040–1; based on Bar-Asher Siegal 2016, 244–245) demonstrates that none of the sentences in (19) has the characteristics of cleft sentences in JBA.

5.1.3 Syntactic difference between the two negators lā and lāw

The following syntactic distribution can be identified: the negator *lā* is assigned a fixed position with respect to the predicate. As is often the case with other negators in standard negations cross-linguistically (Miestamo 2005), it always precedes the predicate (20-21). In contrast, *lāw* does not appear next to the verb in most cases. Instead, it tends to appear either in sentence-initial position (22) or following the overt subject (23).

(20)   'nā   lā   'mari   l-āk
           I   NEG   say.PST.1.SG to-2.M.SG

'I didn't tell you.' (Giṭ. 56b)

(21)   lā   miʿʿrib   šappir

        NEG   mix.PTCP.PASS.3.M.SG   appropriately

        'It is not mixed up appropriately.'(Šabb. 156a)

(22)   lāw   ʿl-eh   qā=sāmk-īnan

        NEG   upon-3.M.SG   DUR=rely.PTCP-1.PL

        'We do not rely upon it.'(Yebam. 25a)

(23)   šmuel lāw   šappir   qā=məšanne   l-eh

        PN   NEG   appropriately   DUR=reply.PTCP.3.M.SG   to-3.M.SG

        'pn was not answering him appropriately.' (B. Meṣiʿa 56a)

The syntactic distribution of *lāw* in JBA suggests that it functions as a propositional operator, as it is not restricted to the immediate vicinity of the verb and is positioned early in the clause in either initial or second position. Its sentence-initial position further supports the idea that, similar to question markers, this type of negation is an operator that is applied to a fully formed proposition (cf. Klima 1964; Horn 2001). Bar-Asher Siegal and De Clercq (2019) provide additional evidence to support this claim:

First, here are no instances of *lāw* occurring together with a *wh*-constituent (24), but there are instances of *wh*-constituent and *lā* occurring together (25-26).

(24)   (unattested) amāy lāw   'asqu-h   l-šmuel

                        why   NEG   bring.PST.3PL-3.M.SG ACC-Samuel

(25)   amāy lā   'asqu-h   l-šmuel

     why   NEG   bring.PST.3PL-3.M.SG   ACC-Samuel

     'Why didn't they bring Samuel with them?' (Ber. 29a)

(26)   kama   lā   miqqṣar

        how.long   NEG   sick.PTCP.3.M.SG

        'How long will he not be sick?' (B. Qama 91a)

It therefore appears that *lāw* in main clauses targets the same position as *wh*-constituents and negative DPs/PPs, and, like *wh*-constituents, it scopes over the entire clause.

Second, Support for the claim that *lāw* needs to be in a position that outscopes regular sentence negation and regular non-topical subjects (i.e. high in the left periphery) comes from its interaction with universal quantifiers. Preposed negative constituents in English cannot take low scope with respect to the universal quantifier (27a), whereas the regular predicate negator allows for both scopal patterns (27b).

(27)a.   Under no circumstances would everyone go to the party.   NEG >∀/ ∀ ≯ NEG

   b.   Everyone hasn't arrived yet.   NEG >∀/ ∀ > NEG

Notably, in JBA, *lāw* patterns with the preposed DP and PP and takes widest scope with respect to universal quantifiers (28)–(29), while *lā* is interpreted as being under the scope of the universal quantifier (30).
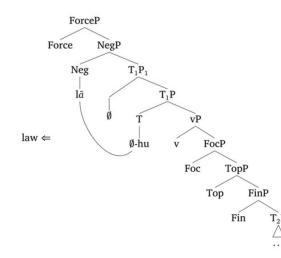
(28)   lāw   kulle-h   ʕālmā ʕbīde
        NEG   all-3.M.sg   world do.PASS.PTCP.3.M.PL
        d-sāyme   msan-e
        REL-wear.PTCP.3.M.PL   shoe-PL
        'It is not the case that everyone is apt to wear shoes.' (Moʕed Qaṭ. 24a)
                                                                            (NEG > ∀)

(29)   lāw   kulle-h   ʕālmā ḥazu   l-sahdūtā
        NEG   all-3.M.SG   world see-PASS.PTCP.3.M.PL   to-tsetemony
        'It is not the case that everyone is eligible (to give) testimony.' (Sanh. 89a)
                                                                            (NEG > ∀)

(30)   R. Ḥanina   hu   d-ḥakkim   kulle-h   ʕālmā lā   ḥakkim-e
        PN   3.M.SG   REL-wise   all-3.M.SG   world NEG   wise-M
        'It's R. Ḥanina that is wise, everyone (else) is not wise.' (Nid. 20b) (∀ > NEG)

Finally, another interesting observation is that *lāw* can co-occur with standard negation *lā* (31):

(31)   lāw   lā   šnā
        NEG   NEG   different.M.SG
        'Isn't it the case that it doesn't matter?!' (Šab 112b)

Notably, it is never attested with another *lāw* in the same clause, which presumably means that configuration is ungrammatical. This observation is important, as several studies (Chung 2007; Collins 2018; De Clercq and Vanden Wyngaerd 2019; De Clercq 2020) argue that the presence of double negation serves as an effective diagnostic tool for determining that two negators are not of the same type. These studies provide evidence that stacking multiple negative morphemes is only possible if they are separated by intervening levels of structure. Therefore, the existence of sentences such as (31) implies that *lā* and *lāw* are not of the same type in terms of either semantics or syntactics.

Bar-Asher Siegal and De Clercq (2019) propose the following syntactic structures of both stages in the history of Aramaic:

(32)

Stage I: The structure of *lāw* sentences in Syriac   Stage II: structure of *lāw* sentences in JBA

For our purposes, it is crucial to note that while *lāw* became a single morpheme in JBA and is found in monoclausal structure, according to this analysis, it has a different scope than the standard negator *lā*. In this respect, *lāw* in JBA has the same scope that it had in earlier stages, which is reflected in Syriac (17) when it was still a contraction of two morphemes and functioned only in syntactically external negation constructions.

5.1.4 Contextual constraints on the use of the negator lāw in JBA

Bar-Asher Siegal (2015) identifies various contexts to which *lāw* is restricted. Accordingly, *lā* is unmarked and *lāw* is marked for the following four functions:

I.   Negative rhetorical questions:

(33)   lāw   ’mari   l-āk
            NEG   say.PST.1.SG   to-2.M.SG
            'Didn't I tell you that ...' (Moʿed Qaṭ. 18b)

(34)   ’aṭṭu   hāhu   gabrā   lāw   yehūdā'-e   hu
            RQM   DEM.M.SG   man   NEG   Jewish-PL   COP.3.M.SG
            'Is this one [i.e., am I] not a Jewish man?' (ʿAbod. Zar. 76b)

II.   In the antecedent of conditional counterfactual sentences:

(35)   ’i   lāw   ’at   bahad-an   lā   hwa
            COND   NEG   you   with-1.PL   NEG   be.PST.3.M.SG
            sāleq   l-an   dinā

raise.PTCP.3.M.SG   to-1.PL   judgement

'Had you not been with us, our judgement would not have been conclusive.'
(Sanh. 30a)

III. To negate a sentence that had been affirmed earlier:

(36)   d-mar   sābar   k-karmelit   dāmy-ā

         REL-master   think.PTCP.3.M.SG   like-karmelit   similar-F.SG

         w-mar   sābar   lāw   k-karmelit   dāmy-ā

         and-master   think.PTCP.3.M.SG   NEG   like-karmelit   similar-F.SG

         'As the one person thought it is like a Carmelite; and the other person
         thought it is not like a Carmelite.' (Šabb. 3b)

IV. To reject a contextual presupposition:

(37)   lāw   ʿakbrāagnab   'ellāe   ḥorā gnab

         NEG   mousesteal.PST.3.M.SG   but   hole steal.PST.3.M.SG

         'It is not the case that the mouse stole, the hole stole.' (ʿAr. 30a)

Upon examining the environments in which *lāw* appears in JBA, it is noteworthy that they are the same as those in previous discussions. The contexts of negative rhetorical questions (34) and antecedents of negative counterfactuals (35) are particularly interesting, as these are contexts where German employs "light negation," and both the PPI "some" and NPI "any" are licensed. The other environments, such as the negation of a previously affirmed sentence (36) or rejection of a contextual presupposition (37), align with Ladusaw's (1980) definition of "denial": "It is stated that ~p, but it is believed or expected that p." In such contexts, as we have seen, some-type PPIs can appear within the scope of negation.

5.2 *neca* in the Sicilian dialect of Mussomeli

Bar-Asher Siegal and De Clercq (2019) (based on data discussed by Cruschina 2010; Garzonio and Poletto 2015) have noted a similar diachronic development in the Sicilian dialect of Mussomeli, where the negator *neca* shares the same origin as *lāw* in JBA. According to Cruschina (2010), *neca* in Mussomeli is derived from a cleft structure, as illustrated by the path of derivation in (38).

(38)   *Un*   *jè*   *ca*   →   *n-è-ca* →   *neca*

         not   it.is   that

Bar-Asher Siegal and De Clercq (2019) have also demonstrated that Mussomeli *neca* appears in almost the same environments as JBA *lāw*. Based on the data from JBA and the Sicilian

dialect of Mussomeli, it seems that Ladusaw (1980) and Schwarz and Bhatt (2006) were on the right track in suggesting that there are two different types of negation. While this proposal was only stipulated for English (which expresses both types of negation with the same negator), it can be established based on empirical evidence in JBA and the Mussomeli dialect, as these languages have two distinct linguistic expressions for each type of negation.

In Section 4, the exploration of this assertion took a semantic perspective and provided evidence for disparities between the two types of negation. A significant semantic contrast in the functioning of negation within the contexts housing all the previously discussed phenomena was demonstrated. While semantic judgments from JBA are unavailable to ascertain whether *lāw* consistently aligns with external negation, insights from speakers of the Sicilian dialect of Mussomeli offer valuable information. Notably, within this dialect, the negator *neca* consistently carries an interpretation closely resembling that of external negation, as outlined by Bar-Asher Siegal and De Clercq (2019):

(39)   neca   arrispunnì   a   tri   dumanni

         neca   answered.3psg   to   three   questions

         ncapu   a   deci

         on   to   ten

  'It is not the case that he answered 3 questions out of 10.' (n≠3) (Silvio Cruschina, p.c.)

Thus, even after the morphological fusion of the components un-jè-ca of external negation into the negator *neca*, the meaning of *neca* retained the semblance of an external negator. This parallels Bar-Asher Siegal's (2015) assertion regarding the functional distribution of *lāw* that fits to the characteristics of external negation. While concrete evidence may be elusive, it seems highly plausible that the semantics of *lāw* were akin to those of *neca* as presented in (39).

5.3 Preliminary conclusions

Upon examining the environments in which *lāw* appears in JBA and *neca* in the Sicilian dialect of Mussomeli, it is noteworthy that they are the same ones raised in previous discussions. Additionally, it's worth emphasizing that, as previously noted, the quantifier "some" operates under the scope of explicit external negation ("It is not the case that..."), which lays the historical foundation for both the JBA negator *lāw* and the Mussomeli

negator *neca*. Furthermore, the interpretation of the latter aligns with that of external negation. Lastly, preliminary indications suggest that *lāw* also surfaces in the context of an NPI licenser.[5] The data collected up to this point is concisely summarized in Table 4.

	neg > *some* in English	Light negation in German	Interpreted like external negation	*lāw* in JBA and *neca* in the Sicilian dialect of Mussomeli
In counterfactuals (especially in antecedents of counterfactual condition)	✓	✓	✓	✓
In negative polar/ rhetorical questions	✓	✓	✓	✓
In the context of denials	✓	✓	✓	✓
In environments in which presuppositions are not projected under negation ('It is not the case that...')	✓	N.A.	✓	This the origin of the form

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[5] There is no study that examines this phenomenon in a systematic way, however, there are contexts similar to what we encounter in English and in German with light negation where *lāw* is indeed found, as in the following example:

lā-ykā	ḥad	min-ayhu	d-lāw	lidraša
NEG-exist	one	fom-3.M.PL	REL-NEG	for-exegetical.interpretation

'Is there not even one [=word] that is not needed for an exegetical interpretation?!' (Naz. 5b).

In the context of an NPI licenser	✓	✓	To be discussed in Section 8	Possibly
The external negation in double negation	N.A	N.A	✓	✓

Table 4 fourth summary of the data

These data suggest that the new negators in JBA and the Sicilian dialect of Mussomeli retain the semantics of their origin, the one associated with external negation. Moreover, given that JBA and Sicilian have two negators that are two formally distinguished and appear in marked environments, an ambiguist approach that assumes the existence of two different negators is reasonable. In addition, given how the environment in which each negator is licensed correlates with environments in which PPIs are "rescued," one may also assume that the two negators differ with respect to whether they can scope over PPIs. Accordingly, these are the characteristics of each of the negators:

- NEG_1 – a standard negator that cannot scope above PPIs and has a narrow scope reading.
- NEG_2 – a marked negator that can scope above PPIs and involves a mandatory wide scope reading, functioning similarly to explicit external negation.

Several questions remain to be addressed:

1) What accounts for the distributions of these two negators?
2) Why do NEG_1 and NEG_2 exhibit distinct behavior in their scoping interactions with PPIs?
3) Why are certain contexts exclusively conducive to NEG_2?

To unravel these queries, it is necessary to delve deeper into the semantic disparities between these two negation types and their associations with particular contexts. This approach involves first detailing the distinctions between these negators (Section 6), then

elucidating their scoping interactions with PPIs (Section 7), and ultimately offering insights into why certain contexts exclusively accommodate NEG_2 (Section 8).

6. The difference between the two types of negation

In this section, I will present two possible explanations for the distinct semantic interpretations that arise with negation, which were first discussed in Section 4. First, I will outline how a *monoguist* approach tackles these differences by focusing on varying scopal interactions. Following this, I will introduce and motivate an *ambiguist* approach, positing substantial disparities between the semantics of the two negators. To begin, I will provide an informal overview of these dissimilarities, followed by a formal analysis of the distinctions between them.

6.1. The monoguist approach: difference in terms of scope

When discussing the two ways to negate sentence (13a), it was observed that sentence (13b) implies that Mike answered any number of questions except for three. The salient reading of sentence (13c), on the other hand, indicates the number of questions that were not answered ("There are three questions out of ten which Mike did not answer"). This difference was explained as a matter of scope, with (13b) exhibiting a case in which the negative operator takes the widest scope and (13c) where the existential quantifier is not in the scope of negation. These sentences are repeated below in (13') with paraphrases to illustrate how the different interpretations result from different scopal interactions between the negative and the existential operators.

(13') (a) Mike answered three questions out of ten.   (n=3)

(b) It is not the case that Mike answered three questions out of ten. (n≠3; preferred: <u>n<3</u>)

Paraphrased: Not-true [Mike answered three questions out of ten]

(c) Mike did not answer three questions out of ten.   (preferred n≤7)

Paraphrased: There are three questions & Not-true [Mike answered them]

(In the parentheses, *n* indicates the number of answers that are required for the sentence to be true.)

As previously mentioned, it is worth noting that the sentence in (13c) can also be interpreted with a wide scope. This observation is consistent with Russell's claim (1905, 490) that a negative sentence such as "the king of France is not bald" has two distinct semantic representations with different truth conditions (40a-b).

(40) a. $\exists x\,[Kx \wedge \forall y\,[Ky \leftrightarrow y{=}x] \wedge \neg Bx]$

      b. $\neg\exists x\,[Kx \wedge \forall y\,[Ky \leftrightarrow y{=}x] \wedge Bx]$

The representation in (40a) reflects a narrow scope of negation, suggesting the existence of a unique French king who is not bald (which is false in the actual world). The representation in (40b) reflects a wide scope of negation, indicating that there is not a unique king who is bald (which is true in the actual world). Similarly, the differences between the readings in (13b) and (13c) can be accounted for by the assumption that only syntactic internal negation can take both narrow and wide scope readings. Nonetheless, it is less clear why only a wide scope reading is available in certain contexts, as mentioned in (14b-e) and repeated below.

(14) (b) There is no one here who didn't answer three questions out of ten. (n>3)

     (c) I am surprised that they didn't answer three questions out of ten.   (n<3/ n≤7)

     (d) If Mike had not answered three questions out of ten, he would have (n>3) failed the exam.

     (e) Didn't he answer three questions out of ten?!   (n=3)

Notably, if the two negators differ with respect to whether they can scope over existential PPIs, then there must be another difference between the two negators that would explain why, when NEG$_1$ has a wide scope reading, PPIs are "anti-licensed," but with NEG$_2$, which has a mandatory wide scope reading, PPIs are not "anti-licensed." It cannot simply be stated that PPIs are not permissible in the scope of the negative operator.

Furthermore, in the previous section, an approach was suggested based on data from JBA and Sicilian, which exhibit two formally different negators, that assumes the existence

of two different negators (NEG_1 and NEG_2) that differ with respect to whether they can scope over PPIs. The distribution of the two negators correlates with the different interpretations of negation demonstrated in (13-14). If the difference between NEG_1 and NEG_2 boils down only to a matter of scope (NEG_1 appears when the scope it operates upon is narrow, and NEG_2 appears when it is wide), and both operate similarly as a truth function, then it is less expected to have a different linguistic form for each negator.

6.2. An ambiguist approach

The fact that some languages use two distinct forms of negation in varying contexts, and that there is a correlation between these forms and their semantic interpretations, suggests that these two types of negation are substantially different. In this discussion, I will first introduce informally, and then discuss formally, the function of each negator in the proposition it interacts with. Subsequently, I will return to the sentences in (14) and explain how the various interpretations of these sentences arise from the function of the negative operator in each context. For additional background from the history of the literature on negation, see Bar-Asher Siegal (2015).

The distinctions between the two types of negation, NEG_1 and NEG_2, can be perceived from various perspectives. If we regard negation **as a semantic function**, these two types exhibit differences in their semantic type, input, and output. When we examine this distinction from an **informational standpoint**, we can discern the types of information that a sentence with each negator conveys. Broadly speaking, we align with Ladusaw's (1980) insight, wherein NEG_1 (formally represented with "¬") imparts a form of information referred to as "assertion of negation," while NEG_2 (formally represented with "~") provides a new information: "negation of assertion." Ultimately, NEG_2 functions as a negative connective in accordance with the definition of negation in classical logic.

Now, I will elaborate more on each of the negators, beginning with **NEG_1** (41).

(41) **NEG_1 (internal negation):** A statement with NEG_1 provides new negative information about the "topic" of the clause. Specifically, a sentence with NEG_1 can be represented as: **[Topic ¬R]**, which means that **the topic is a member of the set that has the quality of not-R.**

When considering statements in terms of information, an increase in information about the "topic" can be positive, for example, when a statement affirms possession of a certain quality, or negative, when the statement denies the possession of a quality or ascribes a negative quality to the topic. This corresponds to Aristotle's term logic, which identifies

two logical qualities: affirmation (*kataphasis*) and denial (*apophasis*).[6] From a discursive perspective, sentences with NEG$_1$ provide a specific type of information — a negative one.

The term "topic" is used in this definition because it follows Aristotelian Term Logic and a pragmatic interpretation of this logic. Accordingly, the Aristotelian concept of predication is an "aboutness" relation and is viewed as providing new information about the topic of the proposition (see inter alia Bar-Asher 2009, Chapter 1). Hence, when assessing the truth value of a sentence, a positive sentence is deemed true if the entity x indicated by the topic belongs to the set with the quality R ($x \in R$). Conversely, a negative sentence is deemed true if the entity belongs to the set lacking that quality or possessing the contrasting negative quality, often referred to as the opposite ($x \in \neg R$).

In both scenarios, the truth value of the sentence hinges on inclusion in a specific set, yet the sets themselves differ. The sets R and ¬R can be considered **contraries** within the Aristotelian framework. As such, attributing both qualities (($x \in R$) & ($x \in \neg R$)) to the same entity simultaneously is not feasible, but such an attribution can concurrently be false (($x \notin R$) & ($x \notin \neg R$)).

From this viewpoint, the negation carried out by NEG$_1$ can be deemed inherently **lexical**. The target of the negation constitutes a predicate or concept, and the outcome of this semantic process entails another predicate or concept — one that is negative in nature. Examining it as a semantic function, NEG$_1$ accepts a predicate as its input and generates a different predicate — the opposite of the initial one — as its output. Consequently, the semantic **type** attributed to this function is of <<e,t>,<e,t>>.

In this approach, the connection between positive and negative predicates is not rooted in logic but rather in lexicology. These are two distinct lexical entries, each possessing independent extensions. Their lexical association arises from the relationships between their respective extensions. From a logical standpoint, contrary pairs may not necessarily be inherently mutually exclusive, but they should be perceived as such based on one's personal experiences.[7]

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[6] This is a different kind of denial than what has been mentioned earlier in the context of Ladusaw (1980). While for Ladusaw it meant the denial of the acceptance of a proposition, in the Aristotelian context it is the claim that a predicate is denied of the subject (see above n. 2 regarding the use of the term "denial" in the literature.

[7] From a psychological perspective, Bermúdez (2003) assumes that negation in natural languages primarily impacts the truth values of propositions by negating the entire proposition (NEG$_2$). As a result, he puts forward the idea that predicate negations (NEG$_1$) are proto-negations, a concept also discussed by Bohn et al. (2020). Accordingly, a negative predicate possesses its own extension, and he suggests that proto-negation reasoning hinges on the formation of discrete contrary pairs, a phenomenon observable even in

I will now informally discuss the second type of negation — NEG$_2$:

(42) **NEG$_2$ (external negation):** A statement about a proposition that provides information about the truth value of the root-proposition, effectively reversing it. When denoting **NEG$_2$**, **~p** signifies that **the root proposition p is false.**

From a discursive perspective, a statement utilizing NEG$_2$ does not provide information about a specific individual, but instead serves as a commentary on another statement. In broader terms, it indicates that a statement fails to hold true, either because it is false or because of a presupposition failure (cf. Geach 1972, 76).

NEG$_2$ can be classified as a truth function of the type <t, t>. It takes a proposition as its object, the truth value of which serves as input to generate the opposite truth value. This approach follows the Aristotelian perspective of **contradictory** opposition between propositions, where propositions p and ~p are mutually exclusive and mutually exhaustive.

It's important to highlight that NEG$_2$ exhibits more limitations compared to Horn's (1985; 2001) metalinguistic negation and van der Sandt's (1991) denial. Within their frameworks, these forms of negation invole either the removal of previously introduced content, or a corrective operation on contextual information. Such negations encompass a wide array of aspects from the preceding utterance, including presuppositions, implicatures, and formal elements such as pronunciation. In our current proposal, NEG$_2$ specifically embodies a distinctc type of semantic negation, and it's important to recognize that not all denials or metalinguistic negations necessarily fit into this category (for further elaboration on the relationship between these different definitions, see footnote 2).

With this delineation of NEG$_2$, we can establish a Tarskian definition for the truth function associated with each of the negators. As the differences between these negators involve informative aspects, it seems natural to articulate these distinctions in terms of

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animals. These pairs don't necessarily need to be logically mutually exclusive but should be perceived as such by an individual. For instance, an animal may establish a contrary pair based on its experience that two types of fruit are never available simultaneously. Contrary pairs can also arise from an understanding of spatio-temporal or object-object relations (Völter and Call 2017). The extent and adaptability of proto-negation use depends on the specific contrary pairs to which an individual is sensitive, predominantly influenced by an individual's direct experiences. In essence, conclusions drawn through proto-negation are confined to distinct states of affairs, contingent on an individual's recognition of specific contrary pairs. According to our proposal, predicate negations (NEG$_1$) are not merely proto-negations but rather represent a fundamental form of negation in natural languages.

dynamic semantics, which considers how information is updated and modified throughout the progression of a conversation or discourse.

6.3 Formal description

In the following section, I will present a standard Tarskian approach to defining truth in terms of satisfaction. This approach, as presented by Heim (1982), defines satisfaction as a relation between sequences of individuals on the one hand, and formulas on the other, relative to a given model. A model for a language L is a pair $\langle$A, Ext$\rangle$, where a set A is the domain of individuals and Ext is a function that assigns to every predicate of L an extension.

(43) If ζ is an n-place predicate, then $Ext(\zeta) \subseteq \underbrace{Ax...xA}_{n \text{ times}}$

Given a model and a formula ϕ, the interpretation rules specify which sequences in L satisfy ϕ with respect to that model. For an atomic formula, which is composed minimally of an n-place predicate and n variables, the basic rule is as follows:

(44) Let ϕ be an atomic formula, consisting of an n-place ζ and an n-tuple of variables $\langle a^1,..., a^n \rangle$ where the indices are $i_1,...i_n$, respectively. Then, for any sequence $a_N \in A^N$:

$A^N \underline{SAT_{A,Ext}} \ \phi$ iff $\langle a_{i1},...,a_{in} \rangle \subseteq Ext(\zeta)$.

In this approach, ϕ is considered true if there is at least one sequence (or every sequence) that satisfies it and false otherwise. Satisfaction is defined by having a sequence of individuals in the extension of a specific predicate. What are the satisfaction conditions for formulas that contain negation? Our proposal identifies two types of negation: NEG_1, which is found in atomic formulas, and NEG_2, which is not. We begin with the definition of a formula with NEG_1 in (45).

(45) Let ϕ be an atomic formula, consisting of an n-place negative (NEG_1) predicate ($\neg\zeta$), the contrary of the predicate (ζ), and an n-tuple of variables $\langle a^1,..., a^n \rangle$ where the indices are $i_1,...i_n$, respectively. Then, for any sequence $a_N \in A^N$:
$A^N \underline{SAT_{A,Ext}} \ \phi$ iff $\langle a_{i1},...,a_{in} \rangle \subseteq Ext(\neg\zeta)$ and $\langle a_{i1},...,a_{in} \rangle \nsubseteq Ext(\zeta)$.

Note that ($\neg\zeta$) is a predicate in the same way that (ζ) is, and that (ζ) and ($\neg\zeta$) are contraries, meaning the union of the extensions of (ζ) and ($\neg\zeta$) is an empty set. In contrast, NEG_2 operates at another level.

(46) Let ϕ be an operator-headed molecular formula (constituents that have one or more formulas as immediate constituents), consisting of a negator (NEG_2) and the

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formula ψ. Then, for any $a_N > A^N$:

$A^N \underline{SAT}_{A,Ext} \phi$ iff it is not the case that $A^N \underline{SAT}_{A,Ext} \psi$.

The difference between the negation expressed by NEG_1 and the negation expressed by NEG_2 lies in the fact that NEG_1 yields a different predicate, and satisfaction is defined by whether a sequence of individuals is in the extension of this negative predicate. On the other hand, the satisfaction of a formula that includes the negation expressed by NEG_2 depends on the lack of satisfaction of another formula.

There is another important distinction between these two negators: NEG_2 necessitates the law of excluded middle, which is about the truth of a proposition. According to (46), if ϕ is true, then $\sim\phi$ must be false, and if ϕ is false, then $\sim\phi$ must be true. In contrast, NEG_1 does not require the law of excluded middle. It is about whether a certain sequence of individuals is in the extension of a certain predicate. Since it is possible for a certain sequence to be neither in the extension of the predicate ζ nor in the extension of the predicate $\neg\zeta$, the definition in (45) only requires that nothing can be in the extension of both.

Moreover, logical double negation only applies to NEG_2, as there is no syntactic rule for the meaning of double negation in the case of NEG_1. A sequence of " $NEG_2 > NEG_1$" is also computable (meaning that it is not true that a sequence $\langle a_{i1} ,...,a_{in}\rangle$ is in the extension of the predicate $\neg\zeta$), but the sequence of "$NEG_1 > NEG_2$" is not (since NEG_1 only operates on predicates, not propositions).

With this background, we can now revisit the sentences in (13) and examine their different interpretations:

(13) a. Mike answered three questions out of ten   (n=3)

   b. It is not the case that Mike answered three questions out of ten (n≠3 <u>n<3</u>)

   c. Mike did not answer three questions out of ten   (n≤7 or n≠3 <u>n<3</u>)

The varying interpretations of these sentences might not arise from different scopes, but rather from different types of negation. Thus, in contrast to the truthfulness of the sentence in (13a), which hinges on the presence of the pair (Mike, three questions) in the extension of the predicate "answer," (13b) signifies the absence of such a truth.

The satisfaction of (13c) (the salient reading), however, relies on the inclusion of this pair within the scope of the predicate "not-answer," as illustrated by the paraphrases in (47). These representations bear significance for our current analysis.

(47) Given that there are 10 questions:

  a. answer (Mike, three questions)

    paraphrased: The relation of ANSWERING exists between Mike and three questions

  b. ~[answer (Mike, three questions)]

    paraphrased: It is not true that the relation of ANSWERING exists between Mike and three questions

  c. ¬answer (Mike, three questions)

    paraphrased: The relation of NOT-ANSWERING exists between Mike and three questions (i.e. at most 7 questions were answered)

6.4 motivations for the ambiguist approach

At this point, the two types of interpretations that come with negative statements have been explained, supported by various examples, in two ways: These differences arise either because of different scope (13') or because there are two types of negation (47).

 The primary motivation thus far for the existence of two types of negators in natural languages, which are defined as different types of functions, has been that these negators have two distinct forms in some languages. However, this proposal goes against the common assumption in the literature that negation in natural languages only expresses NEG_2. As such, it is necessary to provide further evidence that standard negation should indeed be captured as an expression of what was earlier defined as NEG_1. While this paper cannot delve into all the details of this discussion, I will briefly mention a few reasons to support this direction (see also Horn 2001; 2017; and Huang et al. 2020, who provided empirical evidence for various aspects of the approach introduced here).

 First, one form of evidence stems from the logical facets of our analysis concerning the distinctions between the two types of negation. As highlighted earlier, the principles of **the law of excluded middle** and the **law of double negation** exclusively relate to contradictories

and stem solely from the definitions of NEG_2. Notably, Horn and Wansing (2022) and others offer a range of evidence suggesting that these principles do not universally hold in natural languages for sentences utilizing standard negation. These observations lend credence to the assertion that standard negation signifies contrariety rather than contradictions. Consequently, these observations substantiate the contention that standard negation conveys NEG_1 rather than NEG_2.

Second, similarly, multiple experimental studies on vagueness, aligned with a *monoguist* perspective (including Bonini et al. 1999; Alxatib and Pelletier 2011; and Serchuk et al. 2011), demonstrate that vague predicative statements such as "a is neither F nor not-F" often register as true when F represents a vague predicate. It's reasonable to suggest that some of the challenges these studies encounter arise due to the premises of the *monoguist* approach. Nevertheless, those conundrums do not emerge when embracing the *ambiguist* approach delineated in this work. The details of these challenges and how to address them within the proposed *ambiguist* approach are beyond the scope of this paper, however, as they warrant independent investigation and discussion.

Finally, there is compelling evidence to support a key aspect of this analysis, which revolves around the operational role of NEG_1 at the lexical level. Within the approach outlined above, this role entails taking a positive concept as input and generating its corresponding negative counterpart as output. Zweifler's (2021) study provides a striking corroboration for this perspective, particularly evident in her examination of specific expressions such as *mamaʃ* ("really") in Hebrew. Zweifler contends that these expressions operate within the realm of fuzzy categories and that their usage suggests substantial similarities between the contextual referent and the conceptual prototype.

Zweifler's study highlights that the compositional meaning of these expressions, discerned through their interaction with negation, can be easily comprehended by postulating measures of similarity that encompass both the upper and lower bounds of the scale. This principle applies to pairs like "smart" and "not-smart," as well as "beautiful" and "not-beautiful" (cf. Bardenstein and Ariel 2022). Significantly, these expressions distinctly indicate resemblance both to the positive concept and its contrasting negative counterpart. This resemblance is often conveyed through standard negation and aligns aptly with the analysis of NEG_1 presented here. It is worth noting that these instances stand in contrast to scenarios where negation assumes scope over these expressions, thus constituting external negation and contributing insights into the truth value of the proposition. In such contexts, negation couples with an expression that has previously undergone modification via phrasing like *mamaʃ*.

In line with the semantic definitions in (41), this analysis posits that NEG$_1$ operates to modify the predicate, thereby signifying the extension of the lower limit of the scale. This link between our theoretical framework and the evidence furnished by Zweifler's work solidifies our understanding of NEG$_1$'s distinctive function in the linguistic landscape.

In summary, there are compelling grounds to assert that natural languages utilize two distinct types of negation, each operating on different linguistic entities and providing a distinct semantic contribution. The data presented in this paper indicate that the morphological representation and syntactic behavior of these negations varies among languages and that their interactions with specific PPIs differ. The following section is dedicated to investigating whether the semantic framework introduced in this section can effectively account for its interaction with the *some*-PPIs. As will become evident, since this framework successfully explains these interactions, such an explanation further endorses the proposed *ambiguist* approach.

7. The interaction between some-PPIs and the two types of negators

Returning to the topic of the interaction between *some*-PPIs and negation, the question arises as to why one type of negator (NEG$_1$) cannot scope over these PPIs, while another type (NEG$_2$) can. Specifically, the negator in example (48a) does not negate the existential quantification expressed by the quantifier *some*, but it can be negated when embedded in other contexts, as shown in sentences (48b-g).

(48) a. They didn't find some typos.   some > NEG   * NEG > some

      b. There is <u>no one</u> here who didn't find some typos. some > NEG   NEG > some

      c. If they had not found some typos, they would have been happy   NEG > some

      d. I wish they hadn't found some typos in the manuscript.   NEG > some

      e. I am <u>surprised</u> that they didn't find some typos.   NEG > some

      f. Didn't they find some typos?   NEG > some

      g. I am <u>surprised</u> that they didn't find some typos.   NEG > some

Prima facie, this appears to contradict the fundamental principle of compositionality, which states that the meaning of linguistic expressions should not change in different contexts. Therefore, the interpretation of the embedded clause in (48b-g) should not differ from its meaning when the same clause stands independently in (48a).

Monoguist approaches to negation assume that the negation in all cases presented in (48b-g) is the same. In order to defend compositionality, adherents of this approach argue that the alternation between interpretations derives from the interactions between broader contexts and specific elements in the embedded clauses. This is the basis of various syntactic accounts of PPIs.

In contrast, existing **ambiguist approaches** maintain that compositionality is not threatened at all because the negation in (48a) is different from the negation in (48b-g). However, even in this approach, the semantics of negation is very similar for both forms, as both negators operate as truth functions that reverse the truth value. Therefore, the reason that existential quantification operates under the scope of negation in some contexts and does not in others remains arbitrary. I propose an alternative approach based on the semantics of the two negators presented in the previous section and suggest that the way the two negators interact with *some*-PPIs is not arbitrary.

The previous section presented an ambiguist approach, which suggests that the sentence in (48a) contains NEG_1, which only negates predicates and functions at the lexical level, whereas the sentences in (48b-g) consist of NEG_2, which operates at the propositional level and reverses the truth value of the clause. Based on this proposal, the difference between the interpretations that arises because of the interaction between the negative and the existential operators is expected.

In (48a), formally represented in (49a), the negator only interacts with the predicate, yielding the predicate ¬Find. Therefore, it can be interpreted as "there is a typo which X did **not-find**"—the existential quantification cannot fall under the scope of negation. In (48b-g), as in external negation, the entire clause is negated (or declared false), and therefore the negation can capture the existential quantification (=there are no typos), as formally represented in (49b).

(49) a. $\exists x \exists y (\text{Typo}(x) \wedge (\neg \text{Find})(y, x))$

b. $\sim \exists x \exists y (\text{Typo}(x) \wedge \text{Find}(y, x))$

In this account, expressions like *some* are not considered true PPIs, since they are not limited to appearing in positive environments. *Some* can appear under the scope of negation (NEG_2), but it is not negated by NEG_1 as the latter does not operate on the entire

clause and capture predicates. However, it's important to emphasize that this discussion solely pertains to *some*-PPIs and does not encompass all instances of PPIs.

8. Characterizing NEG₂ environments

While this approach seems to offer an elegant explanation for the diverse interpretations of the sentences in (48), the question of what prompts NEG_1 and what prompts NEG_2 remains unanswered. To address this issue, I will attempt to explain why all the cases in Table 4 (repeated below) require NEG_2. The central assumption is that, in general, negation can be either NEG_1 or NEG_2, but certain environments evoke and thereby necessitate the use of NEG_2.

	neg > *some* in English	Light negation in German	Interpreted like external negation	*lāw* in JBA and *neca* in the Sicilian dialect of Mussomeli
In counterfactuals (especially in antecedents of counterfactual condition)	✓	✓	✓	✓
In negative polar/rhetorical questions	✓	✓	✓	✓
In the context of denials	✓	✓	✓	✓
In environments in which presuppositions are not projected under negation ('It is not the case that…')	✓	N.A.	✓	This is the origin of the form

In the context of an NPI licenser	✓	✓	To be discussed in this section	Possibly
The external negation in double negation	N.A	N.A	✓	✓

Table 4 fourth summary of the data

Per the definition in (42), NEG$_2$ functions by reversing the truth value of a root proposition, effectively producing "a statement about a statement". In what follows I demonstrate why it is natural to use NEG$_2$ in all of these contexts, which can be grouped into three categories: Cases of reversing the truth values of propositions, scenarios of negation's informational content, and occurrences of double negation.

The first group involves reversing the truth values of propositions. This group includes negative polar/rhetorical questions and counterfactuals (the antecedents of conditional counterfactuals included). In these contexts, negation functions as the logical operator that reverses the truth value of its clause. It is assumed that the proposition p is true, and for various reasons, the set of worlds in which $\sim p$ is true is considered. We will now explain why these environments involve the reversal of the truth values of the propositions.

A negative rhetorical question is similar in meaning to a statement with the opposite polarity of what appears to be asked (Sadock 1971; 1974). For example, if a speaker knows that the addressee has already had one coffee that morning and should not drink more than one per morning, the speaker may ask the question in (50).

(50) Didn't you already have a coffee this morning?!

Although the speaker knows that the addressee had a coffee, they asked about the occurrence of the event that did not take place (not drinking coffee). This rhetorical device involves a shift in the truth value of the sentence as a whole. The use of NEG$_2$ in such a context is to be expected because it concerns the truth value of the sentence. This

rhetorical device relies on the linguistic ability to reverse the truth value of a clause.[8] In many languages, including English, all negative polar questions come with a bias that the root proposition is true.

The antecedents of **counterfactual conditional sentences** are similar in that the protasis is presumably false in reality and that this assumption is already given in the common ground of the discourse (see, i.a., Anderson 1957; Stalnaker 1975 about the whether this is an entailment or an implicature). The consequent describes how the world would have been if the world described by the antecedent had occurred. Consider the example in (51).

(51) Had the teacher not come, they would have gone home.

In this context, the negation presupposes that the root proposition of the antecedent is true because this sentence is expressed when we know that the teacher has come. Following Lewis 1973's approach to counterfactuals, such a sentence states that there is at least one possible world where they have gone home, which is identical to the actual world, aside from the fact that in this world the truth value of the proposition "the teacher has come" is the reverse of the one in the actual world. Given that counterfactuals are expressed when the root proposition is presupposed to be true, the only additional information is what would have happened if it were false. Thus, it plays on the linguistic ability to reverse the truth value of the proposition, which is the function of NEG_2 as defined in (42). This is true in general when counterfactuality is involved, as such expressions evoke the set of possible worlds which does not consist of worlds represented by the root proposition.

The emergence of NEG_2 within the **second group** finds its rationale in its informative nature. This form of negation surfaces when "a statement is about another statement," introducing a layer of assertion that incorporates the negation's informational content. Considering instances of external negation, this form operates when it asserts the falsehood of the proposition formulated within the embedded clause. In a similar vein, this category encompasses all instances of denials, where *~p* is asserted despite the underlying belief or expectation that *p* holds true. Consequently, NEG_2 negates sentences either

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[8] Cf. Ladd (1981) who distinguished between inner and outer negation in this context and Han (2002), who proposes that rhetorical questions have a wide scope negation in LF.

previously affirmed within the context or when rejecting presuppositions that are ingrained within the context.[9]

The **third group** comprises cases of double negation. In the literature, it has been observed that sentences like (48b) allow PPIs to be in the scope of their clausemate's negation if another negative expression outscopes *some* (i.a., Szabolcsi 2004; Homer 2020). However, this generalization is not empirically true, as shown by sentences (52a-b).

Thus, I argue that this claim is only valid for *some*-PPIs when the negative expression is of the NEG_2 type and not the NEG_1 type. While I am unsure about a strong motivation for why these environments are associated with the NEG_2 type, for our purposes, it suffices to note the correlation between the scopal interaction between negation and the existential quantifier and the way negation is interpreted, based on the test provided in Section 4 for distinguishing between NEG_1 and NEG_2: whenever *some* can be interpreted under the scope of negation, the preferred (if not only) interpretation is a NEG_2 interpretation (similar to external negation), and when it cannot be interpreted under the scope of negation, the test shows a NEG_1 interpretation (in bold is the preferred if not the only interpretation.)

(52)

a. "He didn't know that John didn't understand something"	a'. "He didn't know that John didn't answer three questions out of ten"
1) He didn't know that - there is something John didn't know 2) He didn't know that - John didn't understand anything NEG_1	**1) He didn't know that – John answered at most seven question** 2) He didn't know that - John didn't answer exactly three questions (most likely less) NEG_1

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[9] In such contexts the negation simply indicates that the root proposition is not true. In fact, in English as well such a negation is usually indicated by an external negation, with the addition of the negator no positioned prior to the clause (imagine a conversation between A and B):

(i) A: John came to the movie.

    B: No, he didn't.

This is a case of the so-called Verum Focus. This term, coined by Höhle (1992), refers to a focus which can be rephrased as it is true that in response to a claim with the opposite polarity. In this case, since the negation is the focus, it can be expressed by intonation alone:

(ii) A: John came to the movie.

    B: John did NOT come to the movie.

b. "He didn't tell us that John didn't understand something"	b'. "He didn't tell us that John didn't answer three questions out of ten"
1) He didn't tell us that - there is something John didn't understand 2) He didn't tell us that - John didn't understand anything NEG$_1$	**1) He didn't tell us that - John answered at most seven question** 2) He didn't tell us that - John didn't answer exactly three questions (most likely less) NEG$_1$
c. "I'm not sure that John doesn't understand something" 1) I'm not sure that there is something that John doesn't understand **2) I'm not sure that John doesn't understand anything** NEG$_2$	c'. "I'm not sure that John didn't answer three questions out of ten" 1) I'm not sure that there John answered at most seven question **2) I'm not sure that John didn't answer exactly three questions (most likely less)** NEG$_2$

d. There is no one who doesn't understand something
 	
  1) There is something that every one understand.
  2) Everyone understands something
 NEG$_2$
	d'. "There is no one who didn't answer three questions out of ten"
	
	  1) Everyone answered more than seven answers
	  2) Everyone answered at least 3 answers
	 NEG$_2$

Accordingly, there is no general rule that allows for *some*-PPIs to be in the scope of their clausemate negation if another negative expression outscopes them. Rather, it is the case that there are specific environments in which an earlier negation triggers NEG$_1$, and others in which the earlier negation triggers NEG$_2$. In the first two groups of cases, we can rationalize the context in which NEG$_2$ is being used based on our proposed semantics and informative nature of NEG$_2$. It remains to be understood which characteristics define the environments included in the third group.

Finally, as previously highlighted in (15) (reiterated as (53)), in the context of double negation, the "internal" negation exclusively permits a narrow-scope interpretation ($n \leq 7$), whereas the "external" negation signals the falseness of the statement ($n > 7$), suggesting the existence of more questions that were answered.

(53)   He did not not answer three questions out of ten.   (n>7)

As observed in the data from Jewish Babylonian Aramaic, instances of double negation involve two distinct types of negators. Hence, given that the internal one corresponds to a typical case of NEG_1, the external one functions as a NEG_2, operating on a statement featuring a negation of the predicate.

9. Concluding remarks and implications for the interface of Formal Semantics and Historical Linguistics

9.1 Summary and conclusions

This article integrated both synchronic and diachronic data drawn from a diverse array of linguistic phenomena and languages. Its central aim was to provide support for an *ambiguist* approach to negation. Employing an exploration that encompasses morphology, syntax, and semantics, it delved into the distinctions between two types of negation, anchored in four distinct observations across different languages: 1) instances in English where PPIs of the *some*-type can operate under the scope of negation; 2) the functional distribution of "light negation" in German; 3) cross-linguistic instances where wide-scope negation becomes the exclusive interpretation; 4) the origin and functional distribution of two negators in JBA and the Sicilian dialect of Mussomeli.

By elucidating contexts that consistently mirror marked negation behaviors across these observations, the article adopted a holistic perspective. This approach prompted an exploration into the potential shared underlying factor that contributes to their consistent behavior across diverse linguistic phenomena. Ultimately, the article proposed an ambiguist approach, as it posits the existence of two distinct types of negation, NEG_1 and NEG_2, and claimed that NEG_2 operates in all these marked environments.

NEG_1, functioning as a standard negator, is confined in its ability to scope above PPIs, offering a narrow-scope reading. A statement encompassing NEG_1 introduces novel negative information about the "topic" of the clause. Specifically, a sentence featuring NEG_1 can be captured as signifying the topic's association with the set characterized by the absence of a certain quality. In terms of its semantic function, NEG_1 is of type $<<e,t>,<e,t>>$: it takes a predicate as input and generates another predicate — the contrary of the first — as output. The negation prompted by NEG_1 is therefore inherently lexical. The object of the negation is a predicate or concept, and the result of this semantic operation is another predicate or concept — a negative one. NEG_1 does not interact with *some*-type PPIs, as it negates the predicate and not the existential quantification.

In contrast, NEG_2 — a marked negator — possesses the ability to scope above PPIs, resulting in a mandatory wide scope reading. It parallels explicit external negation in its

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function, serving as a statement about a proposition that conveys information regarding the truth value of the root proposition, effectively reversing that truth value. Denoting NEG$_2$, ~p signifies the falsity of the root proposition p. Classified as a truth function of type <t, t>, NEG$_2$ takes a proposition as its object, the truth value of which serves as input to generate the opposite truth value.

Given that the differences between the negators encompass informative aspects, it seemed natural to formalize these distinctions in terms of dynamic semantics, which takes into account how information is updated and modified as a conversation or discourse unfolds. Therefore, I provided a Tarskian definition for the truth function of each of the negators. Overall, the primary objective of the article was to elucidate the distributions of these two negators. The semantic analysis aimed at explicating the distinct behaviors of NEG$_1$ and NEG$_2$ concerning their interaction with the scope of PPIs, while simultaneously clarifying why certain environments exclusively accommodate NEG$_2$.

9.2 A note on formal semantics and historical linguistics

The examination of the historical evolution of negators in JBA and the Sicilian dialect of Mussomeli presented in this article significantly enhances the synchronic semantic analysis. It demonstrates that even after the morphological fusion of the components *un-jè-ca* of external negation into the negator *neca*, *neca* retained the meaning of an external negator. This exploration underscores the potential synergy between formal semantics and historical linguistics, offering valuable methodological insights derived from this comprehensive research endeavor. Thus, it is essential to emphasize how this article underscores the integral role of historical linguistics in enriching our comprehension of natural language semantics.

In principle, model-theoretic semantic analyses do not rely on historical validity. However, building on my previous work, my aim is to establish the broad hypothesis that historical reanalyses, both syntactic and semantic, are still relevant for the synchronic semantic analysis of certain expressions. In my previous work (Bar-Asher Siegal 2020, especially 20-24), I explored various ways in which the historical development of a given phenomenon may be pertinent to its semantic analysis. The current paper provides an example of what I designate as "weak relevance":

> **Weak relevance** - Insights from correlations: When there is a correlation between grammatical environments that exhibit particular semantic features and environments that have undergone a specific historical grammatical change (especially when this correlation is repeatedly observed in different languages), the correlation should be examined to detect patterns of regularity. This approach hopes that a better understanding of the grammatical change can shed

light on the semantic peculiarity under discussion. This claim for relevance is programmatic in nature. It promotes a direction of investigation without placing constraints on the final conclusions.

Within the context of this linguistic discussion, the concept of "weak relevance" assumes significance as one delves into the historical transformations that have occurred in both Jewish Babylonian Aramaic and Sicilian dialects. This inquiry is specifically centered on the evolution of expressions related to external negation in biclausal constructions, such as cleft sentences, which have undergone reanalysis and subsequently emerged as new negators employed in monoclausal constructions. This comprehensive analysis establishes a compelling link between the outcomes of this historical shift and a range of linguistic phenomena observed in other languages. This connection becomes particularly apparent when we consider the scope of negation in English, where certain PPIs can operate under negation. We also examine the functional distribution of "light negation" in German, as well as contexts where a wide-scope interpretation of negation is the sole available option across languages.

By examining the correlation between diachronic facts and the synchronic distribution of these linguistic phenomena, we can confidently assert that the semantics of negations in Sicilian remained consistent both before and after the historical changes. Furthermore, this analysis offers solid reasons to believe that a similar linguistic continuity exists in the case of JBA, as the use of *lāw* is confined to environments necessitating a mandatory wide-scope reading. Consequently, one can provide a meaningful explanation for why these new negators have emerged within these dialects, noting that their appearance is confined to linguistic contexts that exclusively allow a specific type of semantic interpretation.

Furthermore, these findings provide support for Bar-Asher Siegal's (forthcoming) proposal regarding the Early Semantic Stability Hypothesis. This hypothesis posits that the reanalysis of a linguistic form, whether occurring at the grammatical or semantic level, does not alter the truth conditions of the proposition in which it is embedded. Within the context of syntactic reanalysis, this hypothesis suggests that the truth conditions either remain unaltered or experience minimal modification. As the analysis within this study demonstrates, this hypothesis appears to hold true in the case of the development of the new negators as the semantic function of the form remains consistent after syntactic reanalysis. As a result, we gain from this study further insight into the pivotal role that historical linguistics plays in enhancing our understanding of natural language semantics.

References

Alxatib, Sam, and Francis Jeffry Pelletier. 2011. The psychology of vagueness: Borderline cases and contradictions. *Mind & Language* 26: 287–326. https://doi.org/10.1111/j.1468-0017.2011.01419.x.

Anderson, Alan Ross. 1957. "A theory of subjunctive conditionals" by Robert L. Stanley. *Journal of Symbolic Logic* 22: 324–325. https://doi.org/10.2307/2963647.

Atlas, Jay David. 2012. Negation. In *The Cambridge handbook of pragmatics*, ed. Keith Allan and Kasia M. Jaszczolt, 351–376. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139022453.020.

Baker, C. Lee. 1970. Problems of polarity in counterfactuals. In *Studies presented to Robert B. Lees by his students*, ed. Jerrold M. Sadock and Anthony L. Vanek, 1–15. Papers in Linguistics Monograph Series 1. Edmonton: Linguistic Research.

Bar-Asher, Elitzur. 2009. *A Theory of Argument Realization and Its Application to Features of the Semitic Languages,* PhD thesis, Harvard University.

Bar-Asher Siegal, Elitzur A. 2015. The case for external sentential negation: Evidence from Jewish Babylonian Aramaic. *Linguistics* 53: 1031–1078. https://doi.org/10.1515/ling-2015-0025.

Bar-Asher Siegal, Elitzur A. 2016. *Introduction to the grammar of Jewish Babylonian Aramaic.* 2nd ed. Lehrbücher Orientalischer Sprachen 3. Münster: Ugarit-Verlag.

Bar-Asher Siegal, Elitzur A. 2017. Notes on the emergence of negation words in the Semitic languages. *Lěšonénu* 79: 44–63.

Bar-Asher Siegal, Elitzur A. 2020. *The NP-strategy for expressing reciprocity: Typology, history, syntax and semantics.* Typological Studies in Language 127. Amsterdam: John Benjamins. https://doi.org/10.1075/tsl.127.

Bar-Asher Siegal, Elitzur A. Forthcoming. A formal approach to reanalysis and the Early Semantic Stability Hypothesis: Exploring the test case of the negative counterfactual marker ʾilmale in Hebrew and Aramaic.

Bar-Asher Siegal, Elitzur A., and Karen De Clercq. 2019. From negative cleft to external negator. In *Cycles in language change*, ed. Miriam Bouzouita, Anne Breitbarth, Lieven Danckaert, and Elisabeth Witzenhausen, 228–248. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198824961.003.0012.

Bardenstein, Ruti, and Mira Ariel. 2022. The missing link between truth and intensification. *Studies in Language* 46: 285–322. https://doi.org/10.1075/sl.20076.bar.

Bermúdez, José Luis. 2003. *Thinking without words.* New York: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195159691.001.0001.

Bochvar, D.A., and Merrie Bergmann. 1981. On a three-valued logical calculus and its application to the analysis of the paradoxes of the classical extended functional calculus. *History and Philosophy of Logic* 2: 87–112. https://doi.org/10.1080/01445348108837023. [Original paper was published in *Matématičéskij Sbornik* 4 (1938), pp. 308-387, in Russian].

Bohn, Manuel, Josep Call, and Christoph J. Völter. 2020. Evolutionary precursors of negation in non-human reasoning. In *The Oxford handbook of negation*, ed. Viviane Déprez and

M. Teresa Espinal, 577–588. Oxford: Oxford University Press.
https://doi.org/10.1093/oxfordhb/9780198830528.013.40.

Bonini, Nicolao, Daniel Osherson, Riccardo Viale, and Timothy Williamson. 1999. On the
Psychology of Vague Predicates. *Mind & Language* 14: 377–393.
https://doi.org/10.1111/1468-0017.00117.

Büring, Daniel, and Christine Gunlogson. 2000. Aren't positive and negative polar questions
the same? University of California Santa Cruz.

Chung, Inkie. 2007. Suppletive negation in Korean and Distributed Morphology. *Lingua* 117:
95–148. https://doi.org/10.1016/j.lingua.2005.10.002.

Collins, Chris. 2018. *NEG NEG. *Glossa* 3: 64, 1–8. https://doi.org/10.5334/gjgl.611.

Cruschina, Silvio. 2010. Aspetti morfologici e sintattici degli avverbi in siciliano. *Quaderni di
lavoro ASIt* 11: 19–39.

De Clercq, Karen. 2020. *The morphosyntax of negative markers: A nanosyntactic account.* Studies
in Generative Grammar 144. Berlin, Boston: De Gruyter Mouton.
https://doi.org/10.1515/9781501513756.

De Clercq, Karen, and Guido Vanden Wyngaerd. 2019. Negation and the functional
sequence. *Natural Language & Linguistic Theory* 37: 425–460.
https://doi.org/10.1007/s11049-018-9415-2.

Doron, Edit. 1986. The Pronominal "Copula" as Agreement Clitic. *The Syntax of Pronominal
Clitics*. Brill: 311–332. https://doi.org/10.1163/9789004373150_014.

Garzonio, Jacopo, and Cecilia Poletto. 2015. On preverbal negation in Sicilian and syntactic
parasitism. *Isogloss*: 133–149. https://doi.org/10.5565/rev/isogloss.18.

Gazdar, Gerald. 1979. *Pragmatics: Implicature, presupposition and logical form.* New York:
Academic Press.

Geach, Peter T. 1972. *Logic matters.* Oxford: Blackwell.

Goldenberg, Gideon. 1983. On Syriac sentence structure. In *Arameans, Aramaic, and the
Aramaic literary tradition*, ed. Michael Sokoloff, 97–140. Ramat-Gan: Bar-Ilan
University Press.

Han, Chung-hye. 2002. Interpreting interrogatives as rhetorical questions. *Lingua* 112: 201–229. https://doi.org/10.1016/S0024-3841(01)00044-4.

Heim, Irene R. 1982. The semantics of definite and indefinite noun phrases. PhD thesis, Amherst, MA: University of Massachusetts Amherst.

Höhle, Tilman N. 1992. Über Verum-Fokus im Deutschen. In *Informationsstruktur und Grammatik*, ed. Joachim Jacobs, 112–141. Linguistische Berichte Sonderheft 4. Wiesbaden: VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-663-12176-3_5.

Homer, Vincent. 2020. Domains of polarity items. *Journal of Semantics* 38: 1–48. https://doi.org/10.1093/jos/ffaa006.

Horn, Laurence R. 1985. Metalinguistic Negation and Pragmatic Ambiguity. *Language* 61: 121–174. https://doi.org/10.2307/413423.

Horn, Laurence R. 2001. *A natural history of negation*. Stanford: CSLI.

Horn, Laurence R. 2017. Lie-toe-tease: double negatives and unexcluded middles. *Philosophical Studies* 174: 79–103.

Horn, Laurence R., and Heinrich Wansing. 2022. Negation. In *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta and Uri Nodelman, Winter 2022. Metaphysics Research Lab, Stanford University.

Huang, Haiquan, Peng Zhou, and Stephen Crain. 2020. Negation and Free Choice Inference in Child Mandarin. *Frontiers in Psychology* 11: 591728. https://doi.org/10.3389/fpsyg.2020.591728.

Joosten, J. 1992. The negation of the non-verbal clause in early Syriac. *Journal of the American Oriental Society* 112: 584–588. https://doi.org/10.2307/604473.

Karttunen, Lauri, and Stanley Peters. 1979. Conventional implicature. In *Presupposition*, ed. Choon-Kyu Oh and David A. Dinneeen, 11:1–56. Syntax and Semantics. New York: Academic Press.

Klima, Edward S. 1964. Negation in English. In *The structure of language: Readings in the philosophy of language*, ed. Jerry A. Fodor and Jerrold J. Katz, 246–323. Englewood Cliffs, NJ: Prentice-Hall.

Krifka, Manfred. 1995. The semantics and pragmatics of polarity items. *Linguistic Analysis* 25: 209–257.

Ladd, D. Robert. 1981. A first look at the semantics and pragmatics of negative questions and tag questions. In *Papers from the seventeenth regional meeting of the Chicago Linguistic Society*, ed. Carrie S. Masek, Roberta A. Hendrick, and Mary Frances Miller, 164–71. Chicago: Chicago Linguistic Society.

Ladusaw, William A. 1980. *Polarity sensitivity as inherent scope relations.* Miscellany 42. Bloomington: Indiana University Linguistics Club.

Larrivée, Pierre. 2012. Positive polarity items, negation, activated propositions. *Linguistics* 50: 869–900. https://doi.org/10.1515/ling-2012-0027.

Meibauer, Jörg. 1990. Sentence mood, lexical categorial filling, and non-propositional *nicht* in German. *Linguistische Berichte* 130: 441–465.

Miestamo, Matti. 2005. *Standard negation: The negation of declarative verbal main clauses in a typological perspective.* Empirical Approaches to Language Typology 31. Berlin, New York: De Gruyter Mouton. https://doi.org/10.1515/9783110197631.

Pat-El, Na'ama. 2006. Syntactical aspects of negation in Syriac. *Journal of Semitic Studies* 51: 329–348. https://doi.org/10.1093/jss/fgl006.

Repp, Sophie. 2009. *Negation in gapping.* Oxford Studies in Theoretical Linguistics 22. Oxford, New York: Oxford University Press.

Romero, Maribel, and Chung-Hye Han. 2004. On negative yes/no questions. *Linguistics and Philosophy* 27: 609–658. https://doi.org/10.1023/B:LING.0000033850.15705.94.

Russell, Bertrand. 1905. On Denoting. *Mind* 14: 479–493.

Sadock, Jerrold M. 1971. Queclaratives. In *Papers from the seventh regional meeting of the Chicago Linguistic Society*, 223–231. Chicago: Chicago Linguistic Society.

Sadock, Jerrold M. 1974. *Toward a linguistic theory of speech acts.* New York: Academic Press.

Schwarz, Bernhard. 2004. How to rescue negative polarity items. University of Texas at Austin.

Schwarz, Bernhard, and Rajesh Bhatt. 2006. Light negation and polarity. In *Crosslinguistic research in syntax and semantics: Negation, tense, and clausal architecture*, ed. Raffaella Zanuttini, Héctor Campos, Elena Herburger, and Paul H. Portner, 175–198. Washington, DC: Georgetown University Press.

Serchuk, Phil, Ian Hargreaves, and Richard Zach. 2011. Vagueness, logic and use: Four experimental studies on vagueness. *Mind & Language* 26: 540–573. https://doi.org/10.1111/j.1468-0017.2011.01430.x.

Solt, Stephanie, and Brandon Waldon. 2019. Numerals under negation: Empirical findings. *Glossa* 4: 1–31. https://doi.org/10.5334/gjgl.736.

Stalnaker, Robert. 1975. Indicative conditionals. *Philosophia* 5: 269–286.

Szabolcsi, Anna. 2004. Positive polarity – negative polarity. *Natural Language & Linguistic Theory* 22: 409–452. https://doi.org/10.1023/B:NALA.0000015791.00288.43.

Van der Sandt, Rob A. 1991. Denial. In *Papers from the 27th regional meeting of the Chicago Linguistic Society*, ed. Lise M. Dobrin, Lynn Nichols, and Rosa M. Rodriguez, 2:331–344. Chicago: Chicago Linguistic Society.

Völter, Christoph J., and Josep Call. 2017. Causal and inferential reasoning in animals. In *APA handbook of comparative psychology: Perception, learning, and cognition*, ed. Josep Call, Gordon M. Burghardt, Irene M. Pepperberg, Charles T. Snowdon, and Thomas Zentall, 643–671. Washington, DC: American Psychological Association. https://doi.org/10.1037/0000012-029.

Zweifler, Neta. 2021. Verification of membership degrees: The case of hebrew's mamaʃ. MA thesis, Hebrew University of Jersusalem.

Zeijlstra, Hedde. 2012. Not a light negation. *Semantics and Linguistic Theory* 22: 545–564. https://doi.org/10.3765/salt.v22i0.2645.