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

Elitzur A. Bar-Asher Siegal, Hebrew University of Jerusalem

Abstract

This study delves into the intricate process of reanalysis, wherein linguistic expressions undergo grammatical or semantic changes, or sometimes both. The primary objective of this study is to explore the theoretical aspects surrounding historical changes of this nature. To facilitate a comprehensive understanding of the topic, we provide a formal description of reanalysis as an analytical tool. Our formal description allows for the differentiation of various change scenarios, enabling us to identify distinct types of shifts from one analysis to another. This approach not only focuses on what has been reanalyzed, be it the morphology, syntax or the semantics, but also emphasizes the interplay between all three linguistic modules (Form, Grammar, and Meaning) and their relationships. This holistic perspective enables a systematic examination of the significance of what remains constant at both points in time during the reanalysis process. The key insight arising from this analysis leads us to propose and substantiate the Early Semantic Stability Hypothesis. This hypothesis posits that the truth-conditional semantics of the original proposition remain unchanged throughout reanalysis, either in all contexts or in specific "bridging contexts" where the reanalysis occurs. To demonstrate these phenomena, we present a compelling test case, focusing on the development of the counterfactual conditional marker *ʾilmale* in Hebrew and Aramaic. Through a detailed examination of the syntactic and semantic reanalyses it underwent, we observe the emergence of unique semantic features. By adopting a formal semantic perspective, we address fundamental questions such as the level of ambiguity required for reanalysis to take place, the potential existence of universal constraints on reanalysis, and potential motivations driving these linguistic changes. This investigation provides valuable insights into the intricate mechanisms at play during reanalysis and contributes to the broader understanding of linguistic evolution and development.

1. Introduction.

The focal point of this investigation lies in the complex phenomenon of reanalysis, wherein linguistic expressions undergo changes in either syntax, semantics, or both. As will become clear from the discussions in this article, at its core, reanalysis refers to the *relation* between pairs of grammatical or interpretational analyses for the same linguistic expression within a single language, observed at two consecutive points in time. The main aim of this study is to explore the theoretical underpinnings surrounding such historical changes.

Section 2 provides a brief overview of existing approaches and introduces the central research questions to be addressed. Subsequently, Section 3 offers a formal description of reanalysis, providing a solid foundation for our analysis. In Section 4, we present and justify the Early Semantic Stability Hypothesis, positing that the truth-conditional semantics of the original proposition remains

unchanged during reanalysis, either across all contexts or in specific "bridging contexts" where the reanalysis occurs.

Given the scope of this study, we acknowledge that it cannot encompass all documented cases of reanalysis. Instead, we focus on test cases that demonstrate our methodology and provide instances where the hypothesis is validated. Our investigation centers on the development of a specific counterfactual conditional marker in Hebrew and Aramaic (Sections 5-8). This marker's historical evolution involves both syntactic and semantic reanalyses, making it an ideal example for addressing fundamental questions about reanalysis. We delve into the syntactic (Section 6) and semantic (Section 7) reanalyses undergone by this marker, leading to the emergence of distinctive semantic features. Our analysis takes a formal semantic perspective, allowing us to explore key aspects, such as the level of ambiguity necessary for reanalysis to occur, the potential existence of universal constraints on reanalysis, and potential motivations driving these linguistic changes. Section 9 concludes our observations throughout the article concerning these issues. By thoroughly examining these case studies, this study aims to contribute to a deeper understanding of reanalysis and its implications for the broader field of historical linguistics.

2. Reanalysis: scope and definitions

2.1 Definitions and Research Questions

Reanalysis is often defined in the following terms:

> "A mechanism which changes the underlying structure of a syntactic pattern and which does not involve any immediate or intrinsic modification of its surface manifestation". (Harris & Campbell 1995: 61, based on Langacker 1977).

According to this definition, reanalysis results in a change to the underlying syntactic structure of a phrase, but does not immediately affect its phonological representation. However, this definition is somewhat vague because it is not clear what constitutes a "structure". Additionally, Langacker (1977) has pointed out that reanalysis can also lead to semantic changes, not just structural ones. Others define reanalysis as "the formulation of a novel set of underlying relationships and rules" (Timberlake 1977: 141), without specifying which linguistic module is involved in reanalysis. A review of the literature on reanalysis reveals that different studies have taken varying and even contradictory perspectives on this phenomenon and its fundamental nature. These differences in opinion partly stem from differing definitions of grammaticalization[1] and reanalysis, and the relationship between

* Thanks to Ruti Bardenstein, Noa Bassel, Nora Boneh, Karen De Clercq, Larry Horn, Eitan Grossman and two anonymous reviewers for commenting on an early version of this article. A shorter Hebrew version of this study was published in *Shay le Moshe – Celebrating Moshe Bar-Asher's 80th birthday*, 129-159, The Israel Academy of Sciences and Humanities 2022. The research for this article is part of the project, "The complexity of simplification processes in language change", supported by the Israel Science Foundation (grant no. 2765/21).

[1] When discussing reanalysis, it is important to consider it in relation to the concept of grammaticalization which refers to the process by which linguistic elements change their function and become part of a different grammatical category (see Kuryłowicz 1975:62 and cf. Hopper & Traugott 2003:18). It has been extensively studied in historical linguistics and is often considered an independent and distinct process in language evolution. Some researchers have argued that the unidirectionality of grammaticalization processes indicates that they are internally motivated and not random (Haspelmath

them (Heine et al. 1991: 215, Hopper & Traugott 1993: 48, Haspelmath 1998, Itkonen 2001, Peyraube 2002, Detges & Waltereit 2002, Béguelin et al. 2014, Beckner & Bybee 2009, Kiparsky 2012, Garrett 2012, Hansen 2021, Weiß 2021). While it is beyond the scope of this study to provide a complete history of the discussions in the literature or cover all aspects of this topic (see Madariaga 2017 for a recent review), there are several key questions that have been central to the discussions in the literature on reanalysis and will be addressed in this article:

1. Does reanalysis refer to a single, well-defined phenomenon, or does it encompass a set of related or even unrelated phenomena?
2. What is the nature of this phenomenon? Is it simply a **descriptive** label for a particular state of linguistic historical change, or does it **explain** the change itself? Or could it be a theoretical **constraint**, a requirement that linguistic change must occur in an environment where reanalysis is possible?
3. Can reanalysis be comprehended as a **process** rooted in language processing, or is it merely a term assigned to changes that can be reduced to more fundamental linguistic or cognitive processes?

I will briefly elaborate on these questions as they have been central to much of the discussion on reanalysis. It is my intention to address these fundamental questions throughout the article, aiming to deepen our understanding of the concept of reanalysis and its implications in the context of linguistic change.

2.2 A MINIMALIST APPROACH TO REANALYSIS

To delve into the questions raised, it is essential to begin with the fundamentals: Reanalysis pertains to linguistic situations where there occurs a shift in the grammatical or interpretational "analysis" of a specific surface expression. This shift leads to two distinct underlying analyses emerging in consecutive periods of the same language. It is crucial to clarify that the relevant analyses considered in this context are those made by the language speakers themselves.

From a minimalist perspective, reanalysis can be viewed simply as a convenient **descriptive label**. Accordingly, the claim that some linguistic structure has undergone reanalysiss does not *explain* the change, but rather simply describes a situation where the same phrase has two different analyses in different historical stages of the same language (McDaniels 2003).

Advocates of a minimalist approach to reanalysis might suggest that it occurs simply because it can. In line with this view, some researchers have described reanalysis as a "mistake" (see Detges &

1999, 2004; Hopper & Traugott 2003). However, other studies have challenged the idea that grammaticalization processes are always unidirectional (inter alia Janda 2001, Norde 2009) and others have argued that it involves a variety of phenomena, including semantic shift, syntactic reanalysis, and phonological reduction. As a result, some linguists have questioned whether grammaticalization, is indeed a distinct and independent phenomenon and whether it can provide an explanation for historical language change (Campbell 2001, Newmeyer 2001, Joseph 2001, Lightfoot 2006, among others). These developments have led linguists to increasingly focus on reanalysis as an independent phenomenon worthy of special attention. For example, Formal Diachronic Semantics gave reanalysis a very central place, with focus on understanding it in terms of a shift in truth conditions (see e.g., Eckardt 2006, Chaps. 2-3). This is the theoretical context in which the current study should be considered.

Waltereit 2002: 169),[2] often occurring during language acquisition when language learners misinterpret a phrase and assign it a new analysis, known as a neo-analysis. Accordingly, the distinction between a neo-analysis[3] (a 'reanalysed' grammar) and a regular one is that, in a neo-analysis, the synchronic grammar/interpretation of the linguistic expression does not match the other synchronic grammar/interpretation analysis that generated it, while in regular aquisition, they are identical.[4]

A minimalist approach to reanalysis often assumes that the phonological sequence was originally *ambiguous*, and that the new analysis must have been available to speakers before the historical change (cf. Timberlake 1977: 148). According to this perspective, the ambiguity of the surface data is enough for a construction to be reanalysed, and therefore one would expect reanalysis to be reversible, so that if structure X is reanalysed as structure Y, Y can also be reanalysed as X. In fact, for many linguists, reanalysis is by definition bi-directional (e.g. Heine & Reh 1984: 95, Haspelmath 1998: 325-327).

However, it appears that there is no requirement for an existence of opacity between two available interpretations or two grammatical analyses before reanalysis takes place. In fact, it has been observed that reanalysis can introduce entirely new constructions to languages (cf. Harris & Campbell 1995: 70-72).[5] So, what could be the source of this new analysis? It could potentially stem from another language spoken by the speaker, from a syncretism within the same language, or it could result from the existence of a particular structure that is otherwise available in the language. The existence of two possible analyses may also be linked to universal principles that determine the range of available grammar interpretations. Ultimately, whether there must be opacity between two available interpretations or two grammatical analyses prior to the occurrence of reanalysis is an empirical question that must be answered through empirical investigation to understand the nature of the reanalysis phenomenon.

2.3 BEYOND MINIMALISM

Unlike approaches that view reanalysis as simply a descriptive term, some scholars have attempted to identify the characteristics of cases of reanalysis and explore the potential reasons or conditions that cause or motivate its occurrence. If it is possible to identify factors that trigger a reanalysis of structure X as structure Y, we would not expect the same factors to also motivate the reverse reanalysis (or at

[2] The idea that historical changes are primarily result of "mistakes" is well rooted in the traditions of historical linguistics. For example, the Neogrammarian spoke about "false analogy" (Esper 1973:30-32).

[3] Andersen (2001b, p. 213, n. 3) suggested using the term "neoanalysis" instead of "reanalysis", and various scholars, such as Felser (2017), adopted this suggestion. Furthermore, Hansen (2021) made a clear differentiation between neo-analysis and re-analysis, based on whether the hearer's mental grammar already contains an existing analysis of the construction that undergoes reanalysis.

[4] Researchers who adhere to this perspective frequently adopt Andersen's (1973) model of historical change, which involves a process called "abduction." This process entails generalizing from observed facts and, in the context of reanalysis, leads to the creation of rules that differ somewhat from those that existed previously. However, it is essential to note that Deutscher (2002) offers a critical perspective on the use of abduction in historical linguistics.

[5] See Felser (2017) on the role of ambiguity in historical language change.

least not always), and if this is the case, then reanalysis should typically be unidirectional. In these efforts, various studies have linked the concept of reanalysis to various general explanatory cognitive processes, such as analogy (de Smet 2009, 2014), or even broader principles underlying historical change, such as simplicity and optimization (e.g. Langacker 1977, Kiparsky 2012).

Theories of this kind reject the notion that reanalysis is merely a simple "mistake" made during language acquisition. Instead, they suggest that language learners regularly encounter instances of ambiguity in linguistic structures and are faced with the challenge of selecting between competing interpretations. In essence, the driving force behind these changes lies in the principles that govern the selection of these competing available grammars. To delve deeper into this direction, it becomes apparent that the motivations for selecting one interpretation over another are rooted in cognitive processes. These cognitive mechanisms play a pivotal role in shaping the choices made by language learners when faced with linguistic ambiguity. Thus, the process of selection can be better understood through a cognitive lens, shedding light on the underlying cognitive processes at work during language acquisition. From this perspective, the intricacies of reanalysis extend beyond simple errors and instead offer a glimpse into the intricate cognitive mechanisms guiding language acquisition. Embracing this complexity may allow to craft a more comprehensive and elaborate explanation for the process of selecting between competing grammatical interpretations during language learning.

Alternatively, the availability of two possible grammatical analyses for the same surface material can be seen not as a *motivation*, but rather as a *condition* for the occurrence of such historical changes. In other words, only when two analyses are available can the changes characterized as reanalysis, **which are motivated by other independent factors**, take place. This approach can be found in Eckardt's (2006) work within the framework of Formal Diachronic Semantics. Assuming that changes in meaning do not occur randomly and must be motivated, Eckardt follows Traugott & Dasher (2002) in suggesting that semantic changes do not involve drastic new interpretations for linguistic expressions. Instead, they involve pragmatic meanings that become integrated into the semantic meaning. These are cases where general invited inferences become part of the semantics, leading to a "reorganization of a sentence whereby the salient overall conveyed information remains the same but is composed in a different manner" (p. 236).

Eckardt's research primarily centers on semantic shifts driven by various independent conversational factors, where she highlights the essential requirement for both the original structure and the newly produced one (resulting from reanalysis) to maintain compositional relationships with their respective expression. In this perspective, instances of meaning change are not considered "mistakes." Instead, they signify the incorporation of general invited inferences into the basic meaning of these expressions. This transformation occurs when the inferred meaning "semantisize" and become an integral part of the expression's overall meaning.

However, for such a change to occur, there must exist a compositional pathway through which the relevant expression's new semantic meaning can be reanalyzed and subsequently associated with the form in a compositional manner. According to this viewpoint, reanalysis emerges as a **reaction** to independent semantic shifts rather than a cause for these shifts. It is, in essence, a ***constraint*** - the availability of two analyses for the surface structure becomes crucial to accommodate the independently motivated semantic changes. This approach perceives reanalysis as a methodological

necessity, a conceptual corollary arising from the foundational assumption of the compositional nature of natural language (cf. Detges & Waltereit 2002).

Before addressing questions about the nature of reanalysis, I will introduce a formal description of the phenomenon in the next section. This formalization may seem similar to descriptions that simply characterize reanalysis based on the existence of two "analyses". However, as we will see, this description can go beyond that and serve as a starting point for discussions seeking to understand the motivations behind shifts from one analysis to another. As will become clear throughout this article, such a formalization also serves as a basis for addressing a wide range of phenomena in a nuanced manner.

3. A formal definition of reanalysis

The starting point for the proposed formalization is the understanding of language as a semiotic system anchored in a grammar. According to this perspective, for a phonemic sequence F to be part of the language, it must have a grammatical (syntactic or morphological) structure G and a meaning M relevant to the truth conditions of the utterance of which it is a part. In reanalysis, according to the classical view of this phenomenon, the signifier (i.e., the phonological component F) remains constant (at least initially), while changes occur at the grammatical and semantic levels. Based on this understanding, the formalization of reanalysis is straightforward:

> A reanalysis of a string of phonemes F involves situations in which F is associated with two different pairings of structure and meaning {G, M} at two different *consecutive* points in time (t_1 and t_2).[6] Reanalysis can involve changes at both the morphological/syntactic level and the semantic level (Scenario 1), or it can be restricted to changes at only one of these levels (Scenarios 2-3).[7]

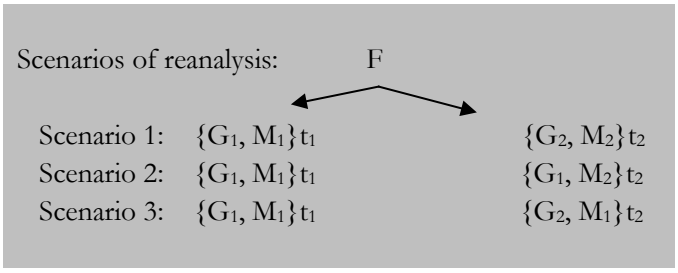

Figure 1: Modeling Reanalysis

The relevant surface manifestation (F) can vary in size, and accordingly there are different types of phenomena relevant at the grammatical level (G) and at the semantic level (M) (cf. Langacker 1977: 61-64). For example, a reanalysis can affect the boundaries of a specific morpheme or be manifested

[6] The change can be a shift that happens during the same time period between two different speakers. However, for the change to be incorporated into the grammar, it must be embraced by the collective grammar. Therefore, it is crucial for reanalysis to encompass two interpretations at two different consecutive points in time.

[7] Since we assume that F remains constant, cases of of *rebracketing* and *categorial relabeling* fall naturally under the category of grammatical reanalysis (see inter alia Langacker 1977, Detges & Waltreit 2002, Weiß 2021 and Hansen 2021).

as a rearrangement of the syntactic structure (changing the internal dependencies between elements within a given construction). As a result, the relevant M may be analysed in terms of lexical semantics (the compositional meaning of a specific morpheme or lexical item), or it may be analysed in terms of truth conditions at the sentence level. These differences are important, as changes at the level of lexical items may not be visible in the sentence meaning (i.e., the truth conditions remain the same).

The advantage of the definition provided above is that it offers a single definition for reanalysis while still allowing us to distinguish between different types of shifts from one analysis to another. We can examine whether reanalysis constitutes a single phenomenon and, more specifically, whether there is a fundamental difference between reanalysis that is confined to the structural level (Scenario 3) and reanalysis that is confined to the semantic level (Scenario 2).

Another advantage of the definition outlined in Figure 1 is that it always considers both the semantic and grammatical levels. Previous characterizations of reanalysis often focused on the module which was reanalysed - syntax or semantics - but this model considers all three factors (F, G, and M) and the relationship between them. This approach allows us to systematically consider the significance of what remains constant at both analyses in two points in time. We can examine whether a lack of change in a particular linguistic module is a condition or trigger for the occurrence of reanalysis in another module. This consideration forms the basis for the Early Semantic Stability Hypothesis, which I will discuss in the next section. This hypothesis suggests that, in reanalysis, the truth-conditional semantics of the proposition initially remain unchanged. It will be proposed that the semantic identity of the two syntactic constructions (the input and output of the reanalysis process) facilitates reanalysis in the first place.

4. The Early Semantic Stability hypothesis

4.1 The hypothesis

The definition of reanalysis provided in the previous section and based on the model in Figure 1, which distinguish between different scenarios of change, allow us to identify different types of shifts from one analysis to another. This model not only focuses on what has been reanalyzed, whether it be the syntax or the semantics, but also pays attention to all three linguistic modules (F, G, and M) and the relationship between them. This allows us to systematically examine the significance of what remains constant at both points in time.

Additionally, as mentioned, different perspectives can be applied to the same reanalysis, taking into consideration different "sizes" of the surface manifestation (F). As a result, at the grammatical level (G), the same change can be examined in terms of the boundaries of specific morphemes and also evaluated in terms of the grammatical relations between different components of a syntactic structure. Appropriately, there are different ways in which semantic changes (M) can be analysed: they can be examined in terms of lexical semantics, or shifts in the truth-conditions at the sentence level can be studied. It is worth noting that, as will be demonstrated in our test case, not all changes in the meaning of lexical items are reflected in the meaning of the sentence, i.e., the compositional truth conditions may remain the same. In these cases, when considering the truth conditions of the entire sentence, the interpretations of the input and output of the reanalysis process are identical.

I would like to propose a hypothesis that encompasses all reanalyses, seeking to formulate a broader claim regarding this linguistic phenomenon. For this purpose, I introduce the Early Semantic Stability Hypothesis as a general principle.[8] This hypothesis posits that during reanalysis, the truth-conditional semantics of the proposition remains unchanged. Both the "old" and "new" interpretations possess identical truth conditions, either consistently across all contexts or in specific "bridging contexts" where the reanalysis takes place.[9] The hypothesis can be succinctly stated as follows:

> **THE EARLY SEMANTIC STABILITY HYPOTHESIS: The reanalysis of a form F does not change the truth conditions of the proposition P that contains it, whether the reanalysis is on the grammatical level (G) or on the semantic level (M).**
>
> In the case of syntactic reanalysis the truth conditions remain identical or equivalent.
>
> In the case of semantic reanalysis the truth conditions of the specific propositions which undergo reanalysis remain unchanged, but, at the actualization stage, reanalysis may give rise other propositions, whose truth conditions are no longer the same.

This hypothesis contradicts the assumption that semantic reanalyses are unrestricted, or at least that grammatical reanalyses are independent of their interpretations. Consequently, the output of a syntactic reanalysis, for example, may lead to a change at the truth conditional level. In contrast, the proposed hypothesis, the Early Semantic Stability Hypothesis, asserts that reanalyses typically maintain consistent truth conditions between the original and the alternative interpretations.

It is essential to acknowledge that, at this stage of our research, the Early Semantic Stability Hypothesis is merely a hypothesis. Our review of the literature on reanalysis suggests that this hypothesis aligns with the empirical data available (see also Bar-Asher Siegal and De Clercq 2019). However, it is crucial to emphasize that further comprehensive studies on reanalysis, specifically focusing on truth-conditional semantics, are necessary to validate its accuracy and reliability.

The subsequent section will delve into the theoretical motivations behind this hypothesis, offering a deeper understanding of the underlying principles guiding its formulation. Subsequently, throughout the remainder of the article, we will present a test case of a historical change involving both syntactic and semantic reanalyses. This case study will serve to illustrate the relevance and applicability of the Early Semantic Stability Hypothesis in a actual historical linguistic context.

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[8] Cf. Detges & Waltereit's (2002) principle of reference, which also "predicts that the sound chain designates the same state of affairs before and after the reanalysis" (p. 161). Interestingly, their application of the classical notion of metonymy is very similar to the concept of bridging contexts mentioned in Section 5.3.1.

[9] It should be noted that, in some cases, the truth-conditional equivalence of the two analyses is confined to particular, salient "bridging contexts". The history of *ʾilmale,* which will be discussed in the next part of the article, does not involve such cases, and therefore this issue is beyond the scope of the current discussion. See, however, Bar-Asher Siegal (2020b: 176-181) and Hansen (2021) for a discussion about this type of changes; Beck & Gergels' (2015) notion of Constant Entailment Principle is also relevant here.

4.2 Theoretical Motivation for the hypothesis

Reanalysis by definition involves a state of affairs in which there are two analyses available for the same F. As mentioned in Section 2, it is often assumed that reanalysis occurs in cases of systematic unsuccessful communication, where the speaker has one analysis for a certain form F that the listener misunderstands and provides an alternative analysis for the same form. This theory suggests that systematic differences between two analyses lead to historical changes. However, this conjecture about the circumstances of actual reanalyses seems to contradict some fundamental assumptions about human communication. I will turn now to explain why this appears to be a contradiction and how the Early Semantic Stability Hypothesis can resolve this theoretical problem.

In general, a communicative event involves transmitting information from a source to a receiver using a perceptible code. Communication is therefore seen as a *code* in which the listener must decode the *message*. According to Shannon's (1948: 379) classic perspective, successful communication occurs when the message received at the terminal point is a *reproduction* of the original message. Interlocutors aim to achieve an *identity* between the messages at both ends of their communication channel. In order to sustain effective communication, there must be a means to identify and address instances of unsuccessful communication, particularly when the listener fails to accurately reproduce the original message. This expectation becomes more critical when there is a high likelihood of systematic failure, as the ability to recognize and mitigate communication errors fosters trust between interlocutors, ensuring successful communication. This, in turn, allows them to anticipate that their messages will be decoded accurately and that they will be understood correctly. Without this ability, the risk of misunderstanding would perpetually loom over every communication exchange.

As mentioned, cases that typically lead to historical changes through reanalysis are events of systematic failure in communication. According to the standard assumptions about human communication, these cases should be identified and corrected. However, instead, reanalysis is a process of entrenchment in which the mistaken interpretation becomes the norm and historical changes take place. This raises questions or even doubts about fundamental assumptions about human communication. Before rejecting these assumptions, it would be preferable to examine whether cases of reanalysis are exceptions and if there is something about their characteristics that prevents interlocutors from identifying the failures in communication. To do this, we need to identify the restrictions on when reanalysis can occur and explain why it is difficult to detect mistakes in communication in cases of reanalysis. The Early Semantic Stability Hypothesis provides such restrictions. To explore this further, we need to consider the criteria for successful communication, as there can be different standards for evaluating communicative success.

Philosophical discussions on the topic of successful communication have clarified that different criteria can be applied in evaluating whether there is identity between the message at both ends of the communication.[10] These possible criteria include:

[10] The discussion on what make a communication to become successful has a very long history in philosophy of language and prior to that in classical discussion on epistemology. See inter alia Dummet (1980), Quine (1992), Sperber & Wilson (1995); for some review of the literature see Paul (1999) and Pagin (2008).

- ⇨ Same content: the speaker's assertion and that subsequently entertained by the listener necessarily have the similar truth-conditions and the same truth value.
- ⇨ Same intention: The listener understands the speaker's intention in uttering the content of the message.[11]
- ⇨ Same code: The hearer perceives the right interpretation in virtue of recognizing the speaker's communicative code, i.e., by decoding the speaker's formulation of the message.

It can be argued that truly successful communication requires identity between both ends at all three levels. Bach (2006:524), for example, argues that the success of communication requires the audience to identify the object that the speaker intended to refer to and in the way the speaker intended. If the audience identifies the object in some other way, it is a matter of "luck" rather than successful communication. While philosophers have focused on the way the speaker refers to the denotation of their linguistic expressions, it is also reasonable to expand this to the way the message is composed syntactically and semantically. It is possible that the listener perceives the correct truth conditions and the general intention of the speaker, but this may be a result of luck or at least not due to interpreting the linguistic code as encoded by the speaker. This can happen when two interpretations happen to share the same truth conditions.

While we may disagree on whether there must be identity at both ends of the communication in terms of the code for successful communication, we can still agree that when luck prevails and there is no identity in how the code is parsed, it is harder to identify and correct failures in communication as long as there is identity in the other criteria (same content and same intention). In other words, when the content of the utterance (M) at both ends of the channel is the same, it is more difficult to trace failure in the delivery of the code.

Even if there is lack of identity between the messages at both ends, as long as there is identity in terms of the pragmatic and semantic content, there has been ***a partially successful communication*** because there are enough crucial parameters by which the messages at both ends are identical. As long as reanalysis is restricted to cases where the truth conditions of the message are the same at both ends, we can understand the prevalence of entrenchment of reanalysis without changing any fundamental assumptions about human communication and the assurance that there is a mechanism to identify mistakes. This mechanism is most effective when there is a change in the content of the message, but not when the change is restricted to how the code is parsed. Therefore, if reanalyses can only occur when the semantic interpretations in both analyses are identical at the propositional level, as proposed by the Early Semantic Stability Hypothesis, it is not surprising that speakers and listeners can have different analyses without correcting the gap between them. Since the content is identical at both ends, there are no extra-linguistic indications to alert about the failure in replicating the messages in communication.

[11] Strawson (1970) presents the *theorists of formal semantics* as opposing those of *communication-intention*. In light of this the semantic and the pragmatic criteria for successful communication should exclude each other. However, as Rumfitt (1995) notes, they are not necessarily excluding each other, and in fact complement each other. See Valente (2021) for the relevance of these approaches to the question of the criteria of successful communication.

Two additional points should be noted: First, the discussion here assumes an ideal communication without noise, where there is clear information about the form F and a clear grammatical and semantic interpretation for the speaker's utterance. This assumption is reasonable because reanalyses result from a systematic gap in the interpretation of a certain *type* of utterance, not from a single speech event. Therefore, such idealization is reasonable. Second, the current proposal assumes that participants in human communication possess a means to accurately grasp the truth conditions. However, I am not firmly committed to specifying precisely how they exercise this control.

Let us now delve into a compelling test case of a historical change, encompassing both syntactic and semantic reanalyses, with a specific focus on negative counterfactual conditions. Through this detailed case study, we aim to showcase the relevance and applicability of the Early Semantic Stability Hypothesis in a practical linguistic context. By closely examining the interplay between syntactic and semantic reanalyses within this historical change, our objective is to reinforce the empirical foundation of our hypothesis. Moreover, this investigation will allow us to discern the advantages of disentangling the grammatical and semantic aspects in each reanalysis and how they interact. By shedding light on the intricate mechanisms at play, we can better understand the significance of the Early Semantic Stability Hypothesis and further solidify its credibility. Through such comprehensive analysis, we take a significant stride towards validating the Early Semantic Stability Hypothesis and reinforcing its position as a valuable aspect for understanding the complexities of reanalysis processes.

5. The grammar of *ʾilmale* in Hebrew and in Aramaic

5.1 THE LANGUAGES

In this study, we will focus on the history of *ʾilmale*, a marker of counterfactual conditions in both Hebrew and Aramaic. Before diving into the discussion, let me make some brief comments on the relevant history of these languages, and more specifically about the justification for discussing them together.

Hebrew and Aramaic belong to two different sub-branches of the Northwest Semitic languages. However, during the Late Hebrew period (200 BCE to 700 CE), the focus of this article, when most Hebrew-speaking Jews were bilingual and used both languages, the functional distribution between Hebrew and Aramaic varied in different places and periods.[12] These languages were very similar in almost every aspect of their grammar, and when they were used by the same speakers, they often underwent similar developments. As a result, the boundaries between them were not sharp (Bar-Asher

[12] Very little is known about the history of Hebrew in Babylonian as it is solely documented in the Babylonian Talmud, which was edited during the 5th to 7th centuries. What we do know is that this particular variety of Hebrew differs in both grammar and lexicon from the one documented in Palestine. It is crucial to clarify that when encountering a distinct development in this form of Hebrew, it becomes impossible to precisely determine when it took place. Such developments may actually reflect an earlier stage or even originate from a development that occurred in an earlier Palestine dialect (see Breuer (1987, 2002) for more details).

Siegal 2020c: 5), and code-mixing (Muysken 2000), where Hebrew words appear in Aramaic sentences and Aramaic particles freely replace Hebrew ones, was widespread.

The texts written in the first two centuries of the first millennium, referred to as the Tannaitic period, are all from Palestine and are mostly written in Hebrew. However, the Babylonian Talmud and Palestinian Talmud, the main corpora of the subsequent Amoraic period (2nd to 7th centuries), frequently switch between Hebrew and Aramaic. The similarity between these languages is influenced by various factors, including geography. For example, Babylonian Hebrew and Babylonian Aramaic have many shared features that are not present in other dialects.

As noted by Bar-Asher Siegal (2019), the grammar associated with *ʾilmale* shows no discernible differences between Hebrew and Aramaic in this context. The grammar depends solely on place (Babylonia vs. Palestine) and time (Tannaitic vs. Amoraic periods) rather than on the specific language (Hebrew vs. Aramaic). Thus, discussing both languages together in this context is justified. Moreover, it is challenging to determine whether the languages underwent precisely the same diachronic changes concerning *ʾilmale* or if one language borrowed the word along with its syntax from the other. The relationship between the two languages in this case appears to exemplify a form of "convergence" in a limited sense, wherein two languages in the same region produce similar developments due to a combination of internal and external factors. However, it is important to note that while convergence typically implies one language becoming more similar to another (cf. Ross 2001: 139), in our case, we can also envision a scenario of truly parallel development (cf. Bar-Asher Siegal 2014: 92-95).

During the Middle Hebrew period (7th to late 19th centuries), Hebrew and Aramaic primarily functioned as literary languages, and some corpora continued to freely shift between the two languages. At the end of the 19th century and the beginning of the 20th century, the revival of Hebrew as a native language among the Jewish community in Palestine (and later Israel) brought about the incorporation of "revived" Aramaic features that were Hebraized (Bar-Asher Siegal & Boneh 2015a). This study examines the syntactic and semantic shifts of the word *ʾilmale* in Babylonian Hebrew and Aramaic, and also discusses some parallels in Modern Hebrew that provide insight into earlier periods.

5.2 THE PUZZLE

The syntactic and semantic evolution of *ʾilmale* in Hebrew and Aramaic has been widely studied over the past 140 years (e.g., Lambert 1880, Jastrow 1885, Schlesinger 1928, Segal 1932, Ben-Yehuda 1948, Ben-Hayyim 1952-1953, Avineri 1964: 34, Breuer 1987, Bar-Asher Siegal 2019, 2020a, and Bar-Ziv Levy 2021). Throughout all periods of Hebrew and Aramaic, *ʾilmale* introduces a counterfactual condition. In these conditionals, the antecedent is false, and its consequent describes how the world would have been if the antecedent had been true. The studies about *ʾilmale* generally focus on the two alternate meanings of this form, which can introduce either a negative counterfactual condition ("if not," "were it not for," henceforth NCC), or it can have a neutral polarity, meaning it introduces positive counterfactual conditions ("if only"), and a negation can be added to it. For clarity, we will label the second option as PCC, indicating that the form, without an additional negator, introduces positive counterfactuals.

The fact that the same form has two meanings has puzzled Hebraists and garnered significant attention. Scholars have long observed that the alternation between the two meanings of *ʾilmale* is not random. Some (e.g., Breuer 1987, Bar-Asher Siegal 2019) have argued that the meaning of the form changed over time in certain dialects, as demonstrated by the minimal pair below. In (1a) from the Tosefta, written in the earlier Tannaitic period (around the 2nd century CE),[13] *ʾilmale* has a negative meaning, while in (1b) from the later Babylonian Amoraic literature (around the 2nd-7th centuries), it is unmarked for polarity and must be followed by the standard Hebrew negator *lo* to express negated statments. The reason for selecting this example is its uniqueness as an instance with the same sentence in different periods featuring distinct grammars – making it an ideal minimal pair:

(1) a. *raʾuy* *haya* *Ezra* *še-tinaten* *torah*
suitable be.PST.3.M.SG Ezra REL-give.PASS.FUT.3.F.SG Torah
ʿal=yad-o ***ʾilmale*** *qidem-o* *moše*
by-3.M.SG **COND.IRR.NEG** come.before.PST.3.M.SG-ACC.3.M.SG Moses
(Tosefta, Sanhedrin 4:7)

b. *raʾuy* *haya* *Ezra* *še-tinaten* *torah*
suitable be.PST.3.M.SG Ezra REL-give.PASS.FUT.3.F.SG Torah
le-yisrael *ʿal=yad-o* ***ʾilmale*** ***lo***
to-Isreal by-3.M.SG **COND.IRR** **NEG**
qidem-o *moše*
come.before.PST.3.M.SG-ACC.3.M.SG Moses
(Babylonian Talmud, Sanhedrin 21b)

Both a and b convey:
"Ezra was suitable for the Torah to be given (to Israel) by him, **had Moses not** come first".

In addition to this diachronic shift in the meaning of *ʾilmale*, Lambert (1880) and Segal (1932) observed that a synchronic distribution pattern can be discerned in the Amoraic Babylonian literature (and later also in Middle Hebrew, in the Medieval Rabbinic literature) where the meaning of *ʾilmale* depends on its syntactic environment. Specifically, when preceding a noun, *ʾilmale* takes on the NCC meaning (the antecedent is negative), but when preceding a clause, it takes on the PCC meaning (the antecedent is positive):

(2) Before a noun (*ʾilmale* +NP):
a. Hebrew
ʾilmale *šabbat, ʾen* *nabi* *be-roš* *hodeš*
COND.IRR.NEG Sabath, NEG prophet in-head.of month
"If it were not Shabbat, there would have been no [reading from] the Prophets on the New Moon". (Babylonian Talmud, Shabbat 24a)

[13] In the context of *ʾilmale*, the language of the *Tosefta* constitutes a middle stage between standard Tannaitic Hebrew and later Amoraic Hebrew. Moreshet (1983), Breuer (1987) and Bar-Asher Siegal (2022) demonstrate that this is a broader tendency, not restricted to this context.

b. Aramaic

ʾilmale	*targumā*	*d-hay*	*qrā*	*lā*	*hwa*	*yāḏʿin-an*
COND.IRR.NEG	translation	of-this	verse	NEG	be.PAST	know.PTCP-1.PL

"**Were it not for** the translation of this verse, we would not have known what it says" (Babylonian Talmud, Megillah 3a)

(3) Clause-initial (*ʾilmale* +*p*):

a. Hebrew

ʾilmale	*kāʿasti*	*ʿale-kem…*	*lo*	*nišʾar*
COND.IRR	be.angry.PST.1.SG	on-2.M.PL	NEG	remain.PST.3.SG
mi-kkem	*sarid*			
from-2.M.PL	remenant			

"for had I become angry on you… not one remnant would have been left from you" (Babylonian Talmud, Berachot 7a)

b. Aramaic

ʾilmale	*draš-aḥ*	*ʾaḥer*	*l-hay*	*qrā..*
COND.IRR	interpret.PAST.3.M.SG-3.F.SG	*ʾaḥer*	ACC-DEM.SG	verse
la	*ḥṭa*			
NEG	sinn.PAST.3.M.SG			

"Had Aḥer interpreted this verse homiletically… he would have not sinned" (Babylonian Talmud, Kiddushin 39b).

Historically, *ʾilmale* developed from the NCC marker *ʾilule*, which still served as the standard form in the Palestinian Hebrew and Palestinian Aramaic of the Amoraic period. The form *ʾilule* itself is a phonological univerbation (Andersen 1987) of three particles, a conditional marker, an irrealis morpheme particle and a negator:

(4)

	ʾi	*lu*	*lā* (>*le*)
	COND	**IRR**	**NEG**

Bar-Asher Siegal (2019, 2020a) identified eight stages in the diachronic evolution of the conditional form *ʾilmale* in Hebrew and Aramaic, involving phonological, morphological, syntactic, and semantic changes. The main focus of Bar-Asher Siegal's work was to provide philological justification for the claims about the historical and geographical distribution of this form, which will not be repeated here.

In the following discussion, I will delve further into a crucial stage in the development of *ʾilmale* and examine how it sheds light on different types of reanalysis. Specifically, I will focus on explaining the connection between the meaning of the form and its syntactic environment as demonstrated in the Babylonian Talmud (e.g., examples 2-3).

In this article, I will present an argument that the distribution of meanings – one occurring before a noun and the other at the beginning of a conditional clause – can be comprehended as a result of diachronic processes. Specifically, a syntactic reanalysis took place, leading to two distinct

syntactic environments where *ʾilmale* assumed different grammatical functions. Subsequently, a semantic reanalysis occurred, but only within one of these environments.

I will provide a detailed explanation of this sequence of diachronic processes and support it on a theoretical level, drawing on comparisons to other related linguistic phenomena. Additionally, I will explore the implications of these findings for the main focus of this article: the nature of reanalysis and the validation of the Early Semantic Stability Hypothesis across various instances of reanalyses.

6. Changes in the grammar and meaning of *ʾilmale*

6.1 THE CHANGES

As previously mentioned, in the Hebrew and Aramaic of the Babylonian Talmud, *ʾilmale* exhibits the following distribution: before a noun – NCC; before a clause – PCC. This distribution, I will argue, is the result of the following historical developments:

I. Initially, *ʾilmale* served exclusively as a clause-initial marker introducing NCCs (as seen in example (1a). Subsequently, a split occurred: when occurring before a noun (*ʾilmale* + NP), *ʾilmale* was reanalysed as a preposition, similar to the English word "without". In clause-initial position (*ʾilmale* + p), it retained its original syntactic function and meaning as a conditional marker with a negator ("if not").
II. At a later stage, *ʾilmale* underwent a semantic shift, changing its meaning from an NCC marker to a PCC marker. This change was only possible in environments where the form served as a marker of a conditional clause and not as a preposition, and the reasons for this will be discussed later.

A detailed stage-by-stage description of this process can shed crucial light on various types of reanalysis. Before we delve into the subject matter, it is important to provide a concise overview of our methodology. The proposal presented above aims to offer a comprehensive explanation for an intriguing linguistic phenomenon: the occurrence of a form that intermittently expresses the negative operator while at other times does not.[14] To achieve this, we rely on a combination of documented stages, backed by solid positive evidence, and inferences drawn from the observed end results.

Certain stages of this linguistic development are well-documented and supported by empirical evidence, providing a strong foundation for our proposal. However, some stages can only be inferred from the observable outcomes. In essence, assuming the occurrence of a particular linguistic

[14] There are expressions that function both as negative operators and as other expressions, such as negation particles that also function as polar question particles. However, the point here is that the same expression is used in the same context (counterfactuals) to express both a negative operator and a non-negative expression. Moreover, one of the reviewers has pointed out that there exists an entire class of words expressing both a meaning and its opposite, known as "contronyms." Hence, the phenomenon we are discussing may not be as unusual as claimed. In fact, it has even been generally argued that "contronyms" are more prevalent among the Semitic languages (see Gordis 1936). Nevertheless, it is essential to note that various studies, such as Bar-Yosef (2016), have identified different lexical processes that commonly lead to this type of homonymity. However, these processes are not applicable to the cases involving logical operators, which are at the core of our discussions. As we have claimed, such instances are particularly rare.

development allows us to account for another development that has been thoroughly documented. In such cases, we need to demonstrate why and how these postulated stages are not only feasible but also highly probable. Through a careful examination of the evidence and logical connections between the stages, we aim to shed light on the underlying mechanisms that give rise to this intriguing linguistic phenomenon. By doing so, we also seek to offer a deeper understanding of the complexities and nuances involved in the expression of the negative operator within the context of our proposed model for historical changes.

6.2 SYNTACTIC SPLIT

The proposal discussed here posits that, initially, *ʾilmale* underwent a purely grammatical change: when in prenominal position, it was reanlysed as a preposition with a meaning similar to the English preposition "without",[15] as shown in the following example:

(5) *ʾilmale šloša miqraʾ-ot halalu nitmoṭet-u ragl-e*
ʾilmale three verse-PL DEM.PL collapse.PST-3.PL leg-of.PL
son'-e-hem šel yisrael
enemy-PL-GEN.PL GEN Israel
"Were it not for / without these three verses, the legs of the enemies of the Jewish people would have collapsed" (Babylonian Talmud, Sukkah 52b)

It is important to emphasize that it is not being claimed that prenominal *ʾilmale* is always interchangeable with the English privative preposition "without", as *ʾilmale* has a more restricted meaning. However, as noted in dictionaries, "without" in English sometimes conveys the meaning (or implication) of a negative condition, as shown in the following examples from the OED:[16]

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[15] This proposal is partially based on Lambert's (1880) suggestion that *ʾilmale* functions as a preposition before nouns. However, Lambert only provided a synchronic description of the facts and did not offer a historical explanation of how this function evolved. There is a large body of literature on these forms that provides alternative explanations for the different meanings of *ʾilmale* in different contexts. Segal (1932: 207) distinguishes between "nominal utterances" and "verbal utterances" (see also Avineri 1964: 34 and Schlesinger 1928: 276). Ben-Yehuda (1948) states that *ʾilmale* means "if not" when followed by an "emphatic noun" (in modern terms, this would likely refer to a focused noun), even if this noun is not the only element following *ʾilmale*, which suggests that negative *ʾilmale* can also occur in clause-initial position. However, this analysis relies on subjectively determining the focus of the clause. Additionally, as Ben-Yehuda admits, it is unclear why focus should affect the semantics in this way (p. 253). According to Ben-Hayyim (1952-1953), the meaning depends on a distinction between nominal and verbal clauses. However, as Ben-Hayyim acknowledges, nominal clauses do not have uniform meanings for *ʾilmale* – in some cases it is negative and in others it is positive. As will be demonstrated later, the proposal that *ʾilmale* became a preposition in certain contexts accounts for the fact that it retained its original (negative) meaning in those contexts.

[16] Without – OED (Accessed on-line February 14, 2021):

> In senses B. 7 – B. 11 often with conditional implication (mostly with negative, expressed or implied): If one have (or had) not, if there be (or were) not, unless one have or there be, in the absence of, in default of, "supposing the negation or omission of" (Johnson)…

(6) "The people believed that without the nobles there was no safety; the nobles believed that without the crown there was no honour" (Henry Thomas Buckle, *History of Civilization in England*, 1862),

It is clear that the preposition "without" does not always convey a meaning of counterfactual conditionality, as in the example "the boy showed up without a book". In other words, while "without" is not inherently associated with counterfactual conditionality, *ʾilmale*, even when functioning as a preposition, always introduces a counterfactual negative condition. For the purposes of this discussion, I will translate the prepositional meaning as "without$_c$", with "c" indicating the conditional implication that comes with *ʾilmale*.

Given that *ʾilmale* originally contained the irrealis conditional element *ʾilma-* (historically derived from *ʾi-lu* a COND-IRR marker) which introduces a condition clause, and a negative component (*lā>le*), it is necessary to explain how a clause-initial conditional marker went through a process of relabelling, i.e. changed its lexical category to become a preposition (see *inter alia* Weiß 2021). Needless to say, this shift involves rebracketing: the morphological univerbation of three units into one.[17] My analysis is composed of the following two claims:

Claim 1: The same F (surface structure) of *ʾilmale*+NP, allows two interpretations at the level of G – in one (G_1) these elements constitute an entire clause (CP), and in another (G_2) just a prepositional phrase (PP).

The same F of *ʾilmale*+NP, could be interpreted as two different constructions – an existential condition-clause consisting of the components in (7a) and a prepositional phrase consisting of "without$_c$" and a noun phrase, as in (7b):

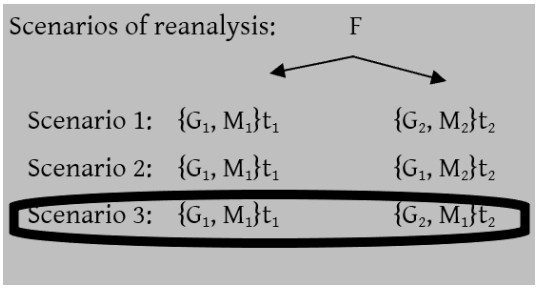
(7) a. (conditional marker +) negation + existential predicate + NP
b. without$_c$ + NP

Claim 2: At the truth-conditional level, the semantics of the entire sentence (M) is the same for both grammatical analyses (G_1 and G_2). The two constructions in (7) are semantically equivalent: the counterfactual condition clause in (8a), with an existential predicate, is semantically equivalent to the prepositional phrase in (8b).

[17] Given that *ʾilmale* (or its historical ancestor *ʾilule*) is limited to being used in the heads of antecedents in negative counterfactual conditional sentences, it is justifiable to assume that they were specifically marked for this environment. Consequently, it can be inferred that these expressions still encompass all three components (conditional + irrealis + negation) from a compositional standpoint and that all three components continue to remain active. The evidence supporting this proposal lies in their functional distribution. Even without knowledge of the origin of these forms, this analysis would have been plausible. However, the knowledge of their actual origin only serves to bolster this analysis further.

(8) a. If there had been no book, David would have failed the test.
b. Without the book, David would have failed the test.

Referring back to Figure 1 of reanalysis types, this change occurs at the syntactic level only (Scenario 3), and the construction produced by reanalysis is semantically equivalent to the original construction in the sense that the compositional contribution of the elements expressed by F, so the truth conditions of their context remains unchanged.



In the following sections, I will delve into this development, focusing on the following issues:

1) Demonstrating the existence of two syntactic analyses (7a-b) and providing evidence that this is the change that occurred (Section 6.2.1).
2) Examining the historical change from a semantic perspective, showing how the two syntactic structures compositionally lead to similar truth conditions (8) (Section 6.2.2).
3) Investigating potential motivations for this historical shift (Section 6.2.3).
4) Assessing the relationship between the changes at the G (grammatical) and M (truth-conditional) levels, and what can be inferred from this study about the nature of reanalysis in general (Section 6.2.3).

6.2.1 Two syntactic interpretations for *ʾilmale*+NP

Considering the origin of its components (4), it is reasonable to assume that initially, *ʾilmale* had a single meaning and grammatical function in all contexts: introducing an NCC. Therefore, clauses consisting only of *ʾilmale* and a noun should also be analysed as complete sentences. The most natural interpretation of these clauses is as bare existentials, i.e., existential clauses that lack an overt existential predicate and only include the NP whose existence or non-existence is being asserted (Interpretation$_1$). This interpretation of *ʾilmale*+NP as a CP, expressing a negative bare existential (Interpretation$_1$), is

commonly found in the literature for equivalent expressions in Semitic languages (such as Arabic, according to Brockelmann (1913: 647-648) and Hebrew,[18] according to Rabin (2000: 180, n.2)).[19]

Initially, the element *ʾilmale* provided the negative quantification for the conditional element. This analysis is natural, as conditional markers function as complementizers introducing the antecedent of conditional sentences, and these expressions often appear in contexts that suggest counterfactual worlds in which the reference of the NP does not exist.

Later on, *ʾilmale* underwent a grammatical reanalysis *in this syntactic environment*, transforming from a conditional marker into a preposition (Interpretation$_2$) that involves existential predication and a negative determiner ("without$_c$ "). This change in grammatical function is similar to documented developments in other Semitic languages, as several prepositions with the privative meaning "without" in Semitic languages, such as Syriac *dlā*, originated from bare existentials (Bar-Asher Siegal 2011: 78-82).

F	*ʾilmale*	Ø	*NP*
Interpretation$_1$ t$_1$	COND.IRR.NEG	EXIST	NP
Interpretation$_2$ t$_2$	without$_c$ (preposition)		NP

Table 2: Two interpretations for *ʾilmale*+NP

An analysis of *ʾilmale*+NP as a PP (Interpretation$_2$), was first proposed by Lambert (1880). His proposal was based on the distribution of the form *ʾilule* – from which *ʾilmale* is historically derived – in Palestinian Hebrew and Aramaic. In these dialects *ʾilule* appears only in NCC, and Lambert notes

[18] As an example of bare existentials, one can observe a passage in Genesis 39 that features a similar construction in three formulae expressing "everything that he has":

a. *w-kōl* *yēš* *l-ô*
and-all EXIST to-him

b. *w-kōl* *ʾăšer* *yēš* *l-ô*
and-all REL EXIST to-him

c. *w-kōl* *ʾăšer* *l-ô*
and-all REL to-him

Elaborating on the role of existential predication in possessive constructions is beyond the scope of this current study (see Bar-Asher Siegal 2011). For our purposes, it is essential to acknowledge that existential predication can be expressed either with the existential predicate *yēš* (a-b) or as bare existentials (c). In the context of Late Hebrew, which is the focus of the current article, Azar (1995: 90-91) has noted such sentences in Mishnaic Hebrew:

d. *Qōhelet* *ʾênâ* *mṭamm-â* *ʾet* *hayyādayim*
Ecclesiastes COP.NEG render-unclean.PTC-F.SG ACC DEF-hands
wĕ-šir ha-šširīm ***mahhlōqet***
and-Song-of-Songs **dissension**
"Ecclesiastes does not render the hands unclean, and about the Song of Songs **there is dissension**" (Yd 3, 5)

[19] Although it is beyond the scope of the current discussion, I will briefly note that the equivalent expression in Biblical Hebrew *lulē* appears in contexts of bare-existential, see Psalms 94:17 and compare with Psalms 63:8 and Genesis 31:42. Providing a comprehensive account of the syntax of the verse in Psalms 94:17 necessitates an analysis of the continuation of the verse.

that when in prenominal position, it appears on its own, but when in clause-initial position it is always followed by the complementizers *še-/d(e)-* ("that"):

(9) a. *ʾilule d-ana watran ʾafillu qlositia*
COND.IRR.NEG REL-1.SG.NOM benevolent even *qlositia*
d-ʿal reš-ak didi hwa
REL-on head-POSS.2.M.SG POSS.1.M.SG be.3.M.SG
"Were I not benevolent, even the cover on your head would have been mine" (*y. Gịt* 4:3)

b. *ʾilule ʾelaha d-qatl-eh man hwa yākil*
COND.IRR.NEG God REL-kill.PST.3.SG-3.SG.ACC who be.3.M.S can.PTCP.M.SG
qatl-eh
kill.PST.3.SG-3.SG.ACC
"Without God killing him, who could have killed him" (*y. Taʿnit* 4:6)

I would like to strengthen this proposal, by noting that this is the expected difference between prepositions and conjunctions in these dialects. As Table 3 shows, in Palestinian Aramaic, similar forms regularly function as both prepositions and conjunctions. The formal difference is that only in the latter they are followed by the complementizer *d-* (see Goldenberg 2013:106; Bar-Asher Siegal 2013, on the function of complementizers in Semitics):

Prepositions	Conjunctions
bedil on account of	*bedil d-* on account of/since
batar after	*batar d-* after that
lepum according to	*lepum d-* because
mẹtul because of	*mẹtul d-* because since
min begin because of	*min begin d-* since, because
mišum because of, in the name of	*mišum d-* since. because
ʿad until	*ʿad d-* while until
ʿal menat in order to	*ʿal menat d-* with the intention that

Table 3: prepositions and conjunctions in Palestinian Aramaic

Lambert points to similar uses of *sans que* in 17th century French, and notes that German clauses beginning with *ohne dass* and Italian clauses beginning with *senza che*, both of which literally mean "without that," display a similar distribution.

It must be noted, however, that Lambert's claim that *ʾilmale*+NP in the Babylonian dialects is a preposition cannot be supported by the same evidence. In the Babylonian dialects, there is no formal marking of a complementizer (*še-/d(e)-*) before complete sentences and, in fact, there has been a change in meaning in these environments. Despite this, Lambert's observations are still important for two reasons: they provide support for the idea that such a syntactic reanalysis could occur, and it is possible that this reanalysis happened prior to the split between the Palestinian and Babylonian dialects. If this

is the case, then Palestinian Hebrew and Aramaic reflect the stage prior to what we see in Babylonian Hebrew and Aramaic.

Furthermore, it can be demonstrated that such a development could occur independently in both dialects. This is supported by the fact that additional evidence for a similar syntactic shift can be found in equivalent forms in other Semitic languages. (We can postulate that the equivalent developments occurred independently in those languages, presumably under similar circumstances.)

In Arabic, as in other Semitic languages, there are different forms for personal pronouns when they are independent (either nominative or accusative) and when they follow a preposition (genitive). In Arabic, the standard pronominal forms in the *lawlā* + NP construction – the Arabic equivalent of *ʾilmale* + NP – are in the genitive (10a) and not in the nominative (10b) (cf. Cantarino 1975), as is expected with prepositions:

(10)	a.	*lawlā-ka*	b.	**lawlā*	*anta*
		IRR.NEG-2.M.SG.GEN		IRR.NEG	2.M.SG.NOM

Thus, it is clear that in Arabic, the *lawlā* + NP construction functions as a PP.[20] As for Babylonian Hebrew and Aramaic,[21] there is no positive evidence that a similar change took place in these dialects. The data is consistent with both interpretations.

The primary reason for positing the relabeling of *ʾilmale* as a preposition in these dialects will become evident in the subsequent part of this article. This explanation will shed light on the outcomes of other historical changes, which I will elaborate on below. In the case of Babylonian Hebrew and Aramaic, the main support for this development is inferred from observable results. Essentially, assuming the occurrence of a grammatical split between two functions allows us to account for the end result in this dialect.

Thus, for our purposes, it suffices to conclude that such a development is *plausible* based on its occurrence in Arabic and other contemporary dialects of Hebrew and Aramaic (specifically, in the Palestinian dialects). Given this, and considering that Interpretation$_2$ aligns with the available data, we will assume that this analysis also applies to these dialects. Subsequently, we will demonstrate that if this change did indeed take place, it can explain other changes observed in these dialects.

6.2.2 The historical development from the semantic perspective

Turning to the semantics, the claim is that despite the relabelling of *ʾilmale*, which involves a semantic change in the meaning of this linguistic item, both syntactic interpretations yield two propositions

[20] I wish to thank Nadine Abdel-Rahman for this observation. For what it is worth, the internet yields attested cases of *ʾilule-xa* "if not for you/without you" in Modern Hebrew, which demonstrates that, at least for some speakers of Modern Hebrew, this is also a preposition (in Modern Hebrew *ʾilule* and *ʾilmale* behave similarly).

[21] A possible argument against this proposal is that *ʾilule* is attested twice (Babylonian Talmud, Sanhedrin 13b; Avoda Zara 8b) before the nominative form *hu* "he", which should not follow a preposition. However, it is likely that this is an instance of a spelling error, and the pronoun is actually an accusative/gentive clitic, *ilmale-hu*. This form of the clitic sometimes occurs after verbs (*reʾiti-hu* "I saw him") and after prepositions (e.g., *lemaʾane-hu* "for him" in Proverbs 16:4). The spelling הוא *hu* in apparently clitic contexts is common in the Babylonian Talmud (see Bar-Asher Siegal 2016, pp. 110-113). Unfortunately, there are no attested cases in the 1st and 2nd person, where a pronoun and clitic would be clearly distinct.

with similar truth conditions. As we saw earlier, the counterfactual condition clause in (8a), with an existential predicate, is semantically equivalent to the prepositional phrase in (8b), repeated below:

(8)

a. If there had been no book, David would have failed the test.

b. Without the book, David would have failed the test.

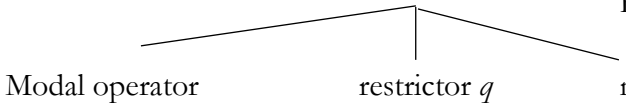
As mentioned earlier, *'ilmale* can be morphologically associated with three elements: a conditional marker (COND), an irrealis marker (IRR) - indicating a counterfactual condition, and a negator (NEG) that belongs to the existential predication. Therefore, to comprehensively examine the semantic development from a compositional perspective, it is essential to provide information about the three components of meaning that these expressions involve:

1) The semantics of conditionals: This involves exploring the relationship between the prepositions *q* and *r* in a sentence such as "if *q* then *r*" essentially understanding the nature of the conditional *if*.
2) The specific relation between q and r in counterfactuals.
3) The semantics of the antecedent *q* in cases like (8a) when it denotes existentials ("If there had been no book",) particularly in sentences with bare existentials.

Clearly, discussing thoroughly all these elements is beyond the scope of the current study. In the following section, I aim to outline how the development portrayed in 6.2.1 can be captured in a compositional manner. Consequently, we will present specific analyses for each of these components of meaning without delving into the justifications for selecting a particular analysis over the ones existing in the literature. For our purposes, it is crucial to observe how different syntactic representations can convey the same meaning while composing the same truth conditions differently.

Regarding the first element, we will adopt Kratzer's semantic analysis of conditionals, which comprises three parts (as illustrated in Figure 2): modal operator, restrictor, and a nuclear scope. Differing from the traditional approach to conditionals, where the 'if *q* then *r*' construction is depicted as a binary sentential connective, Kratzer's approach considers conditionals as modals of the subsequent *r* and the antecedent *q* serves as an additional restrictor. This restrictor narrows down the quantificational domains of modals (and other) operators (Kratzer 1986).

Figure 2: Conditionals à la Kratzer



Considering *f* as the modal base and *g* as the ordering source for the entire conditional, the truth condition in 11 indicates that f+ is the model base for expressing β, and accordingly α adds an additional restriction for the modal base of β:

(11) $[[\textit{if}\ \alpha\ \beta]]^{f,g} = [[\beta]]^{f+,g}$, where for all $w \in W$, $f+(w) = f(w) \cup \{[[\alpha]]^{f,g}\}$

The key aspect of this analysis is that "if" is not a logical connector between two propositions; instead, it takes the subsequent β and specifies that under certain conditions, there exist worlds in which β must be true. In other words, in certain worlds where α holds true, β must also hold true.

Turning to the second element, when we examine counterfactuals, we are dealing with relationships between possible worlds. According to Lewis (1973), counterfactuals pertain to possible worlds that is similar to the actual world. They describe a world in which β hold. This alternative world is very similar to the actual world, with the sole difference being that α holds in that world but not in the actual world. To represent this counterfactual condition, (12) uses "□→" as follows:

(12) $[[\text{if}_{\text{counterfactual}}\ \alpha\ \beta]]f, g = [[\alpha]] \boxed{\rightarrow} [[\beta]]$

A counterfactual is characterized by an empty modal base *f* and a totally realistic ordering source *g* (Kratzer 1986). For simplicity, for our purposes, we can express it as a straightforward formal representation of the meaning of the conditional "$\text{if}_{\text{counterfactual}}$ *q r*" when w denotes the actual world:

(13) $\sim q(w).\forall w' \in \cap Sim(w)\ [(q(w') \subseteq r\ (w')]$

This indicates that in the actual world, *q* is false, and in all worlds similar to the actual world, the ones where *q* holds also *r* holds.

We now come to the last component of the meaning, which is the semantics of the antecedent q in cases like (8a) that express existentials ("If there had been no book"), particularly in sentences with bare existentials. Let us begin with the terminology. Consider the sentence in (14):

(14) There is <u>a book</u> <u>on the shelf</u>

pivot *coda*

The post-copular NP (*a book* in (14)) is often referred to as the pivot, and the other NP (*on the shelf* in (14)) is termed the coda. While some analyses (such as those by Keenan 1987 and Zucchi 1995) consider sentences with codas to be the basic form of existentials, where the combination of both elements delivers the existential predication, others (like McNally 1992, Francez 2007, 2009, and Bar-Asher 2009) argue that bare existentials (without a coda) are the basic construction (for a recent review of the literature, see McNally 2015). According to this view, only the pivot is responsible for the existential predication. In this study, I will follow the latter approach.

While a review of the arguments supporting this approach is beyond the scope of this article, for our purposes it is sufficient to mention, following Francez (2007), that a broad cross-linguistic survey shows the pivot to be the only universally obligatory part of existential constructions. Additionally, it is important to note that bare existentials are widely attested in Semitic languages, including Hebrew and Aramaic (Brockelmann 1913: 35-41 and Bar-Asher 2009: 425-431).

The perpetual question with existentials is, of course, what constitutes the predicate and what constitutes the argument(s) in such sentences. For the purpose of capturing the syntactic and grammatical development of *ʾilmale* in Hebrew and Aramaic, I will adopt Francez's (2007, 2009) proposal, although other theories that consider bare existentials as the basic construction can equally capture this historical change. Francez takes the pivot to be the main (second-order) predicate in existential constructions. According to this approach, the predicate in bare existentials is saturated by an implicit argument, namely its scope set, which is a set of entities linked by some contextually-determined relation to this discourse referent. Thus, (15) formally represents the semantics of existential predication, where P is a set of entities of any type τ, Q is a relation between sets P, determined by the determiner of the pivot, and N, a set determined by the common noun in the pivot:

(15) $[[\text{there be NP}]] = [[\text{NP}]] = \lambda P_{(\tau, t)}[Q_{((\tau, t), ((\tau, t), t))}(N_{(\tau, t)}, P)]$

When the determiner is the negative element "no", as in sentences with the structure "there is no NP", the meaning conveyed by the sentence is that the intersection of the sets P, Q is empty.

(16) $[[\text{there is no NP}]] = \lambda P_{(\tau, t)}[\textbf{no}_{((\tau, t), ((\tau, t), t))}(N_{(\tau, t)}, P)]$

According to this analysis, *ʾilmale* originally had a single meaning and a single grammatical function: it introduced an NCC. *ʾilmale* was a combination of several morphemes: *ʾilma* is a conditional that marks counterfactuality, hence describing the relations represented in (12)-(13) between propositions, and functions syntactically as complementaizer, while the [*lā*>] *le* provided the negative quantification, for the predication of the first proposition (16). At this stage, when *ʾilmale* occurred before a noun, the noun was understood as the pivot of the existential predication. (In this analysis, *existential predication* is conceptually reduced to a relation between two sets: one determined by the determiner of the pivot and the other by the common noun.)

Subsequently, *ʾilmale* underwent grammatical reanalysis in this syntactic environment, transforming into a preposition with the meaning of "without$_c$", one that involves existential predication and a negative determiner, but also denote a counterfactual relation with the root proposition (the proposition without the PP "without$_c$"). The meaning of the preposition with its relation to the root proposition *r* is represented in (17):

(17) $[[\text{without}_c\ N\ r] = [[q]] \square\!\!\rightarrow [[r]]$, where $[[q]] = \lambda P_{(\tau, t)}[\text{no}_{((\tau, t), ((\tau, t), t))}(N_{(\tau, t)}, P)]$

From a semantic perspective, the "without$_c$" preposition marks a relation between an N and a proposition. Moreover, it provides an equivalent to a counterfactual condition, whose antecedent contains a negative existential claim with the pivot being the N in the PP.

Both constructions represented in Table 2, lack overt indication of the existential predication. The relabelling is such that *ʾilmale* transformed from a complementizer (a conditional element with a negator meaning "if not") to a preposition (with the meaning of "without$_c$"). Consequently, a syntactic

shift occurred, where the component *ʾilmale*+NP' no longer constitutes an independent clause but has become an adjunct in a mono-clausal structure.

By adopting Kratzer's semantic analysis of conditionals, consisting of three parts (as illustrated in Figure 2), the reanalysis can be described as follows: At t_1, the restrictor was the antecedent clause of the conditional, associated with the structure of the clause (CP, tense, etc.); at t_2, the function of the restrictor became part of the nominal element in the PP that consists of the preposition *ʾilmale*. It is noteworthy that nothing inherently requires the restrictor to be a complete clause, as long as it contains a predication, that denotes an independent eventuality (type).

An exhaustive syntactic account would necessitate an independent study on the syntax of such prepositions, which goes beyond the scope of the current study. However, it suffices to propose that a syntactic analysis for the use of *ʾilmale* as a conditional preposition can follow the same line of Zobel's (2008) analysis for adjunct expressions with a "conditional-antecedent-like interpretation."

It is worth noting that the discussion in this subsection is significant for multiple reasons. It illuminates semantic changes from a formal perspective and offers insights into tracing and understanding reanalysis from a compositional standpoint. By demonstrating the semantic equivalence of the two sentences in (8) through formal illustration, we establish a crucial link between the syntactic change and its corresponding semantic reflection. This relationship is pivotal as it lies at the core of our representation of reanalysis and serves as the methodology to validate the Early Semantic Stability Hypothesis proposed in Section 4.

One final point to note is that, in this analysis, *ʾilmale* always occurs in a bi-eventive environment. The combination of *ʾilmale*+NP does not refer to the same eventuality denoted by the main predication of the sentence. For instance, consider the sentence in (8b) ("Without the book, David would have failed the test.") The eventuality of "the non-existing of a book" and the eventuality of "David's failure of the test" are not the same. Thus, the reanalysis of *ʾilmale* in this environment as a preposition involves the reduction of a bi-clausal structure to a mono-clausal one while retaining bi-eventivity. In this respect, it is similar to causal prepositions, such as "because of," which are also bi-eventive (Bar-Asher Siegal & Boneh 2015b: 15-18). Interestingly, according to Henderson (2010), NCC markers have a causal component as part of their meaning. Henderson even noted that in some languages this component is overt: in English the equivalent expression is *if not for X* – with the causal component *for*, and in Spanish it is *Si no fuera porque* X (lit. if not be.SBJ because X). If there was also a causal inference in Babylonian Hebrew and Aramaic, we observe another intriguing semantic outcome. When *ʾilmale*+NP was interpreted as "without$_c$", it acquires a bi-eventive interpretation. In such instances, it is interpreted with a causal inference, which is governed by a universal principle. This principle posits that all adjuncts denoting an event distinct from the one expressed by the main predicate should be interpreted as having a causal relationship (Bar-Asher Siegal & Boneh 2015b: 15-18).

6.2.3 Motivations for the reanalysis and the role of the semantics in the change

Before turning to the further developments of *ʾilmale,* let us consider what this proposal implies for the broader questions on reanalysis presented in the introduction. Assuming that the analysis in the

previous sections captures the shift from one grammatical interpretation to another, and the semantic analysis represents the lack of semantic change at the propositional level, we may want to ask: "what prompted the change?" It is worth exploring whether the change in the grammatical interpretation of *ʾilmale* from a conditional marker with an independent negator to a preposition can be seen as a special case of a more general phenomenon, as this may provide insight into whether reanalyses happen randomly or in specific environments.

The change in question involves transforming a complex bi-clausal structure (a conditional sentence with a condition and consequence) into a uni-clausal structure with a prepositional phrase, which can be considered a structural simplification. It has been noted that many syntactic changes involve paradigmatic simplification of this sort (Harris & Campbell 1995, Givon 1991, Grossman 2009). Interestingly, the reverse transformation – from a uni-clausal structure to a bi-clausal one – is never (or very rarely) observed in diachronic language change. Therefore, it is possible that the transformation of *ʾilmale* follows general principles that motivate changes of grammatical structures into alternative structures with identical meaning, including the principle of structural simplification (see also Roberts 1993, Roberts & Roussou 2003, Van Gelderen 2010, and Weiß 2021).

It is likewise significant that this structural change was not attended by any semantic change at the propositional level. According to the description of the historical change proposed here, the reanalysis was purely syntactic and did not affect the truth conditions at all. As Bar-Asher Siegal (2015a) and Bar-Asher Siegal & De Clercq (2019) have suggested in a different context, the availability of two alternative syntactic analyses without changes **in meaning at the propositional level** is likely what **enables** syntactic reanalysis.

Using the terminology in Figure 1, we can state that, although both syntactic interpretations were available at t_1, the association between G_2 and M_1 at t_2 is new. The analysis presented here implies that the syntactic reanalysis of *ʾilmale* was possible precisely because there was no change on the semantic level ($M_1 = M_2$) at the propositional level. This example, along with others, indicates that syntactic reanalysis is more likely, and perhaps even solely possible, when there is no concurrent change in meaning. This observation serves to validate the Early Semantic Stability Hypothesis (Section 4), which posits that maintaining consistent truth conditions between the interpretations before and after reanalysis is a crucial prerequisite for such structural reanalysis to occur.

Finally, as noted in Section 2, another question about reanalysis is the source of the "new interpretation": must it already be familiar to speakers in some way, either through an equivalent in another language, through some language-internal constraint, or through innate universal grammar? The discussion of the syntactic transformation displayed by prenominal *ʾilmale* sheds some light on this question. Despite its similarity to developments with other privative meaning prepositions, the reanalysis of *ʾilmale* produced a unique linguistic item "without$_c$", a preposition that is only used in contexts that combine the meaning of "without" with an obligatory component of negative counterfactual condition. So far, I have not found evidence of an equivalent form in any other language family (besides the equivalents in other Semitic languages discussed in this article). The unique meaning of this preposition arises from the possibility of associating a phonetic sequence F with a meaning M and two different grammatical structures: an existential clause introduced by a conditional element, and a preposition followed by a noun.

This shows that reanalysis can create grammatical forms with unusual meanings that may even be unique to a particular language. The characteristics of the product depend on the specific nature of the original form and the processes it underwent. *ʾilmale* is not the only example of this; there are other instances of "unique linguistic beast" produced through similar processes of reanalysis.[22] Therefore, reanalysis does not necessarily reproduce a pattern that already exists in the language or in other languages available to speakers, but rather depends on semantic interpretations made available by the grammar of the language in which it occurs.

7. A two-stage semantic change

After discussing the purely syntactic reanalysis in the context of *ʾilmale*+NP, we need to examine more closely the semantic change that took place with *ʾilmale* at the beginning of a clause (*ʾilmale*+p). This change occurred in two steps. The first step involved, as I will argue, the addition of expletive negation. The second step involved a reanalysis of this expletive element as meaningful negation, transforming *ʾilmale* in the context of *ʾilmale*+p from an NCC marker into a PCC marker. According to this proposal, the semantic transformation of *ʾilmale* – from a counterfactual conditional marker that includes a negative element ("if not") to a marker of counterfactual condition unmarked for polarity – was preceded by a process that *added* a semantically transparent linguistic component to the existing expression.[23] The following section explains this two-step change and examines it in the context of broader questions about the nature of reanalysis.

7.1 Expletive negation.

Based on the etymology of the form, and on its appearance in earlier strata of Hebrew, I argued that *ʾilmale* originally included a negative morpheme. As noted earlier (4), this conditional marker was formed through a phonological univerbation of three particles: *ʾi* "if" + *lu* – irrealis marker + *lā* – negator. In Andersen's (1987) terms the univerbation was merely phonological, involving no morphological change, for *ʾilmale* continued to consist of three separate morphemes, one of them a functional negator.[24] Accordingly, in its original meaning, *ʾilmale* could not be followed by another overt negative element, since this would have produced double negation where it cannot appear. Although double negation is often possible, and yields the equivalent of a positive proposition (18), it is unavailable in counterfactual conditionals, as discussed in Bar-Asher Siegal (2015b) and shown in (19).

[22] See Bar-Asher Siegal & De Clercq (2019), who discuss negative elements that emerged independently in Jewish Babylonian Aramaic and in Sicilian, and whose unique shared features are also unique linguistic beast and are the result of their historical development.

[23] Interestingly, Harris & Campbell (1995: 72-75) observed that *exploratory expressions*, i.e., expressions added to existing constructions without contribution to the meaning, very often undergo reanalysis.

[24] It is crucial to clarify that when I refer to three morphemes at the synchronic level, I am emphasizing their compositional contribution. In other words, from a structural point of view, *ʾilmale* encompasses these three functions. However, it is not my intention to imply that speakers necessarily identify the boundaries between these morphemes intuitively.

(18) He didn't not come (= he came).

(19) *Had he **not not** come, I would have been happy (=had he come, I would have been happy).

This is also true of *ʾilule*, used in the earlier Tannaitic period, and in Palestinian Hebrew and Aramaic, in which the sequence *ʾilule*+ NEGATOR is never attested.

ʾilmale+ NEGATOR first appeared in the Tosefta, which is a later Tanaitic text. Notably, in this corpus the meaning of *ʾilmale*+ NEGATOR was the same as that of *ʾilmale* without a negator: both meant "if not" (cf. Breuer 1987). In other words, the number of meaningful morphemes was identical in both constructions, as the negators *lo* and *lā* did not contribute any additional meaning. Therefore, we see both variations used with a negative meaning, as shown in ((20a) – a repartition of (1a)) and (20b):

(20) a. *raʾuy* *haya* *Ezra* *še-tinaten* *torah*
suitable be.PST.3.M.SG Ezra REL-give.PASS.FUT.3.F.SG Tora
ʿal=yad-o ***ʾilmale*** *qidem-o* *moše*
by-3.M.SG ***ʾilmale*** come.before.PST.3.M.SG-ACC.3M.SG Moses
"Ezra was suitable for the Torah to be given (to Israel) by him, **had Moses not** come first" (Tosefta, Sanhedrin 4:7)

b. ***ʾilmale*** ***lo*** *hizziq-o* *haya* *yafe*
ʾilmale **NEG$_{EXP}$** injur.PST.3.SG-ACC.3.M.SG be.3.M.SG worth
šmone *me-ot* *zuz*
eight hundred-PL zuz
"If [the belligerent ox] had not damaged [the other ox], the value [of the latter] would have now stood at eight hundred dinars". (Tosefta, B. Qama 3:5)

The use of semantically null negative elements, also known as expletive, pleonastic, superfluous, or paratactic negation (as discussed by Abels in 2005, Krifka in 2010, and Makri in 2013, among others), is a common phenomenon (we will use the term "expletive negation".) These are examples of negative expressions that do not alter the polarity of the proposition in which they appear.[25] In French, for instance, the clausal complement of the verb *avoir peur*, meaning "to be afraid," may sometimes include expletive negation:

[25] One of the reviewers has suggested that the case of *ʾilmale* followed by a negator should be considered as a case of polarity concord rather than expletive negation. First, it is essential to note that various analyses in the literature argue for a connection between certain triggers of expletive negation and negative concord (Zeiljstra 2004; Espinal 2007; Yoon 2011; Mari & Tahar 2020), indicating that these two phenomena may not necessarily exclude each other.
Second, it is worth mentioning that this phenomenon holds relevance to all cases of type C in Jin & Koenig's typology (see Table 4), and in the literature, they are considered as cases of expletive negation.
Third, negative concord refers to cases where two or more negative elements, each capable of expressing negation in isolation, yield only one semantic negation. Accordingly, we may consider *ʾilmale* as agreeing with the sentential negator. However, this raises the question of how the negation appears initially, as it is not attested in earlier periods. Nonetheless, the historical account provided here still offers insights to address this question as well.

(21) J'ai peur qu'il **(ne)** pleuve.[26]
"I'm afraid it is going to rain".

Expletive negation is also widely attested in Semitic languages.[27] In Biblical Hebrew, there are examples of "until not" meaning "until" (Ecclesiastes 12:1, 2, 6.), and Modern Hebrew exhibits the phenomenon as well (Eilam 2007). In fact, Modern Hebrew exhibits instances of *ʾilmale lo* with expletive negation, as shown in (22a), which includes an instance of *ʾilmale lo*, and in other places one can also find cases of only *ʾilmale* (22b), both of them meaning "if not".[28]

(22)

a. *ha-nusxa* *hayta* *yexol-a* *lehišama* *nifla* ***ilmale***
DEF-formula be.PST.3.F.SG able.PTCP-F.SG sound.INF wonderful ***ʾilmale***
lo *nikla'-nu* *ba-bxirot* *ha-axronot* *la-rašuy-ot*
NEG fall.into.PST.1.PL in.DEF-election DEF-last to.DEF-authority-PL
le-merxac damim..
to-bloodabth
"The formula could have sounded wonderful, if we hadn't fallen into a bloodbath… in the last municipal elections" (https://www.kolhazman.co.il/361485)

b. ***ilmale*** *hitaakšu* *hoca-ot* *ha-sfar-im* *še-axtom*
ʾilmale insist.PST.3.PL publisher-PL DEF-BOOK-PL REL-sign.FUT.1.SG
al *sfar-ay* *hayiti* *mevater* *al* *ha-ta'anug*
on book-1.POSS.PL be.PST.1.SG give.up.PTCP.M.SG on DEF-pleasure
"If the book publishers had not insisted that I sign my books, I would have given up the pleasure." (https://www.israelhayom.co.il/opinion/666161)

The use of expletive negation has been studied extensively from both syntactic and semantic perspectives (such as in the work of Espinal in 1992, van der Wouden in 1994, Abels in 2005, Yoon in 2011, Makri in 2013, and Zovko Dinković & IIc in 2017). For the purposes of this discussion, it is important to note that Jin & Koenig (2019, 2021) have found, through a typological review of over 700 languages, that the occurrence of expletive negation is not random. Instead, it tends to be restricted to specific environments that have a common feature: they involve a situation where both a proposition and its negation are cognitively prominent, causing speakers to utter the negative sentence instead of the positive one. In other words, Jin & Koenig argue that when certain verbs or other linguistic forms trigger semantically-empty negation, the appearance of this negation is not a

[26] For a recent account of expletive negation *ne* in French, including a literature review and historical account of its origin see Mari & Tahar (2020).
[27] For a recent review of negative expressions in Semitic languages in light of typological literature, see Sjörs (2019). His review mentions many cases of "pleonastic" negation (see p. 75, 88, 139, 164).
[28] In this phenomenon, Modern Hebrew resembles the early Tannaitic stage, which preceded the Babylonian Talmud (Bar-Asher Siegal 2019). This cyclical pattern in the historical development of Hebrew is due to its unique status as a literary language in the middle ages (Bar-Asher Siegal 2021), as well as unique factors in its revival. For a comprehensive overview of counterfactual markers during the revival of Hebrew, see Bar-Ziv Levy (2021).

matter of grammar (competence) but rather of production (performance), at least in the initial stages. In their words:

> "A speaker intends to say p, but because ~p is strongly activated by the meaning of a trigger, ~p is produced. Furthermore, because p and ~p are typically entailed (but relative to distinct sets of worlds or time intervals…) by the meaning of EN [=expletive negation]-triggers, the likelihood of occurrence of EN is higher than for other kinds of inferences". (Jin & Koenig 2019: 164)

To illustrate their proposal let us consider the following Modern Hebrew sentence, featuring expletive negation:

(23)	*ad*	*še-**lo***	*yetapl-u*	*ba-gorem*	*ha-enoši*
	until	REL-**NEG$_{EXP}$**	take.care-3.M.PL	in. DEF-factor	DEF-human
	lo	*ihye*	*šinuy*		
	NEG	be. FUT.3.M.SG	change		
	"Until they take care of the human factor, there will be no change".				

This example involves two time periods: a period during which the proposition "they didn't take care of the human factor" (~q) is true, followed by a period during which the proposition "they take care of the human factor" (q) is true. During the first time period, the preposition "there will be no change" (~p) is said to be true, while in the second time period, the opposite proposition "there will be a change" (p) is said to be true. This is illustrated in Figure 3, which shows the axis of time divided into the two time periods:

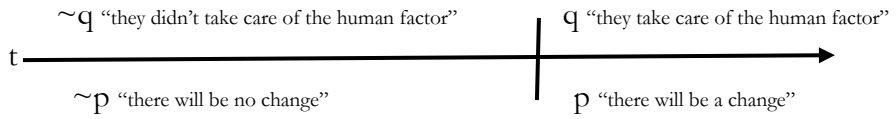


Figure 3: Time axis for clauses with the connective "until"

Based on Jin & Koenig's reasoning, we can argue that, since both p and ~p are entailed, albeit for different parts of the time-line, both are cognitively salient, causing the speaker to utter one instead of the other. This idea can also be presented in terms of relations between sets of possible worlds. Let us take the following example from French, with the conjunction *sans que* "without", which also exhibits expletive negation, can be used in the following way:

(24) Je ne partirai pas sans que tu **ne** m'embrasses pour me dire au revoir.
"I won't leave without your (**not$_{EXP}$**) kissing me goodbye."

The statement in (24) expresses relationship between different sets of worlds, which are most similar to the actual world *w* in terms of relevant conversational aspects. Specifically, (24) asserts that in the

set of worlds in which p holds ("the addressee kisses the speakers"), q holds ("the speaker is leaving"), and that in the set of worlds in which p doesn't hold, q does not hold either, as captured by (25):

(25) $\forall w' \in \cap Sim(w)\ [(\sim p(w') \subseteq \sim q(w')) \ \&\ (p(w') \subseteq q(w'))]$

According to Jin & Koenig's proposal, in sentences like (23), the speaker intends to express "until-q". However, because ~q is also cognitively prominent (as it represents the current state of affairs), "until ~q" is *mistakenly* expressed. Similarly, in (24), the speaker intends to say "without your kissing me goodbye", but expresses the negated sentence, because the situation in which the addressee does not kiss is also cognitively salient (the current state of affairs). Moreover, Jin & Koenig argue that all contexts that trigger expletive negation belong to one of the four categories in Table 4.

a. **Propositional attitude and speech report triggers:** An operator can trigger the occurrence of an expletive negation in its argument proposition if its meaning entails (or strongly implies) the existence of two distinct propositions of the form Op1(p) and Op2(~p), where p and ~p are true in different sets of worlds, as determined by the meaning of Op1 and Op2.
b. **Temporal operator triggers:** A temporal operator of the form Op1(q, p) can trigger the occurrence of an expletive negation in its argument proposition if its meaning entails (or strongly implies) the existence of two distinct time intervals at which p and ~p are true.
c. **Logical operator triggers:** A modal operator (*impossible*) or propositional functor (*unless*) that includes in its meaning ~ can trigger the occurrence of an expletive negation in its argument proposition.
d. **Comparative triggers:** An operator can trigger the occurrence of an expletive negation in its argument proposition if its meaning entails the existence of two propositions of the form Q(Y, D) and ~Q(Y, D') (Y possesses property Q to degree D and D' respectively).
(2019: 166-167)

Table 4: Types of triggers or expletive negation

Returning to the case of NCCs headed by *'ilmale,* this marker clearly belongs to the third category, being a propositional functor whose meaning includes the negative operator. In line with Jin & Koenig's broader insights, the presence of expletive negation in NCCs is not surprising, as these sentences presuppose that the proposition expressed by the antecedent is false. In other words, if the antecedent expresses ~p, it is inferred that p is true in the actual world. Consider example (20b) again, repeated in (26) now only in English translation:

(26) If [the belligerent ox] had not injured [the other ox], the value [of the latter] would have now stood at eight hundred dinars.

This conditional sentence divides the set of possible worlds into those in which p is true and those in which ~p is true (**p =** "the belligerent ox injured the other ox"), and presupposes that p is true in the actual world (*w*).

The set of worlds in which p holds [in these worlds: the value of the second ox is less than 800 dinars]

The set of worlds in which p does not hold [in these worlds: the value of the other ox is at least 800 dinars]

Figure 4: The partition of the possible worlds in NCC-contexts

In other words, counterfactual conditionals (with additional presupposition, to be further discussed in Section 7.2.2) generally divide the set of possible worlds into two subsets – those in which the antecedent is true and those in which the antecedent is false – and make an assertion regarding the validity of the consequent in each subset. Therefore, both the antecedent and its negation are salient in the speaker's mind. These conditionals therefore seem to belong to the category of contexts which, according to Jin & Koenig's analysis, tend to trigger expletive negation.[29] In light of this, it is easy to imagine a situation where *ʾilmale* gave rise to expletive negation, resulting in the semantically equivalent expression *ʾilmale lo*$_{EXP}$. As shown by example (22a) above, a parallel development occurs in Modern Hebrew as well.

I would like to add a point to Jin & Koenig's (2019, 2021) arguments. In contexts that give rise to expletive negation, it is not only the case that both p and ~p are true in some of the salient worlds. In most cases, the phrase in question involves uttering p, but it is ~p that is true in the actual world.[30] Consider the examples in (27):

(27)

[29] A similar development can be observed in French sentences with the expression *à moins que* ("unless"), which also divides possible worlds in a similar manner, and gives rise to attested cases of expletive negation:

i. Je l'aiderai à moins que vous ne le fassiez
"I will help him, unless you (do not) do so."

[30] In sentences with expletive negation referring to the future, it is often observed that there exist two alternative futures, and the negated one is the preferred option in the actual world. This phenomenon can be exemplified by sentences like (18) in French: *J'ai peur qu'il (ne) pleuve*, where "pleuve" represents the not-preferred future in which it is raining. Mari & Tahar (2020) propose that the expletive negation "ne" in French functions as an expression to reverse the ordering relation encoded in the lexical semantics of negative polarity attitudes. However, in their descriptions, Mari & Tahar (2020) do not distinguish between cases where the occurrence of *ne* is mandatory and has become a grammatical necessity, and cases where its usage remains optional.

"I deny that p" ⇒ "I claim that ~p is true in the actual world"
Expletive negation: "I deny that **not**$_{EXP}$ p"
"q is true until p" ⇒ "at the time of the utterance ~p is true in the actual world"
Expletive negation: "q is true until **not**$_{EXP}$ p"
"q is the case unless p happens" ⇒ "at the time of the utterance ~p is true"
Expletive negation: "q is the case unless **not**$_{EXP}$ p happens"
"q is the case without p happens" ⇒ "at the time of the utterance ~p is true"
Expletive negation: "q is the case unless **not**$_{EXP}$ p happens"

It is therefore worth considering that it is a critical criterion for triggering an expletive negation that a clear judgement about the actual world, whether it is part of the set of worlds in which p is true or whether it is part of the set of worlds in which ~p is true, is part of the common ground. This point will become relevant for our discussion in Section 7.2.2.

7.2 Clarifications about expletive negation

Having shown that negative counterfactual conditionals are a natural environment for the emergence of expletive negation, I would like to address three additional issues:

7.2.1. Performance vs. grammar

According to Jin & Koenig (2019, 2021), since the potential for expletive negation is related to the semantic characteristics of the linguistic context, it is not surprising that similar triggers for expletive negation occur across languages. Moreover, they argue that the relevant contexts are ones in which speakers tend to produce spontaneous instances of expletive negation, i.e., "slips of the tongue" that contravene the grammatical rules of the language. They demonstrate that while initially expletive negation arises in spontaneous speech, it can later become part of the grammar and grammaticalize (cf. their distinction between high- and low-entrenchment.) This happens to varying degrees: the negative element may become licit (i.e., optional) in a given construction, or may even become compulsory, although it is semantically redundant.

Modern Hebrew *ʾilmale* seems to exhibit the first stage, where expletive negation is possible and is not infrequently attested. This explains why we find examples of both *ʾilmale* and *ʾilmale lo* (as shown in example (22a&b)). Below, I will propose that, earlier in the history of Hebrew and in Aramaic, a process of grammaticalization occurred whereby expletive negation became mandatory with *ʾilmale*.

7.2.2. Designated NCC markers.

As noted earlier, if we follow Jin & Koenig's proposal, the presence of expletive negation in counterfactual conditionals is expected: these conditionals divide the set of possible worlds into two subsets – those in which the antecedent is true and those in which the antecedent is false – and make an assertion regarding the validity of the consequent in each subset. The question is therefore, why expletive negation is found in conditionals introduced by *ʾilmale*, but not in counterfactual conditionals with ordinary conditional marking, which can license an overt (non-expletive) negative element ('If I

had not… then…')? I suggest that this has to do with the unique semantics of *ʾilmale* as a designated NCC marker.

Studies have shown that counterfactual conditionals introduced by an unmarked conditional marker (e.g., *if* in English) differ from conditionals that feature designated NCC markers (such as English *if not for* or Hebrew *ʾilmale*). Counterfactual conditionals generally convey that both the antecedent and the consequent are false in the real world:

(28) If John were not sick with the measles, he would have joined us today. ⇝ John does have the measles, and he did not join us.

However, this is not a logical (or lexical) entailment, but rather an implicature, and as such it can be cancelled (Anderson 1957, Stalneker 1975):

(29) Speaker A: If John were not sick with the measles, he would have been helping us, not sitting and reading the paper.
Speaker B: If John were not sick with the measles, he would have looked happy and healthy – which is exactly how he looks – so I'm pretty sure he is not sick at all but just lazy!!

But when the NCC is introduced by a dedicated linguistic marker, such as *if it were not for* in English, the falsity of the condition is a presupposition, which cannot be cancelled (Henderson 2010 and Ippolito & Su 2014).

(30) ?? **If it were not for John being sick with the measles,** he would have looked happy and healthy – which is exactly how he looks – so I'm pretty sure he is not sick at all but just lazy!!

In other words, only conditionals introduced by designated NCC markers (like *ʾilmale*) *necessarily* make a statement about the actual world.[31] Thus, they divide the possible worlds into two sets, which differ in terms of the truth conditions of the antecedent and consequent (as illustrated in Figure 4). This explains why these antecedents constitute a natural environment for expletive negation, in contrast to their counterparts with an ordinary conditional marker and a negative marker (*if not*). As noted earlier, according to Jin & Koenig (2019, 2021) expletive negation is expected when both p and ~p are entailed for different possible worlds, and, as we added, especially when p or ~p is entailed to hold in the actual world. Since *ʾilmale*-conditions presuppose p, while *if* conditionals with negation only imply p, it

[31] In so far as it is possible to determine this based on data from an ancient language, counterfactuals introduced by *ʾilmale* and *ʾilule* in early Hebrew indeed trigger a factive presupposition about the actual world, and in Modern Hebrew they definitely introduce such a presupposition. Furthermore, Henderson (2010) argues that designated NCCs differ from standard counterfactuals in that they support only ontic counterfactuals and not non-causal epistemic inferences. Review of the relevant examples in the corpora, this seems to be true for *ʾilmale* counterfactuals in all periods.

follows that the former are more likely to trigger expletive negation than the latter.[32] Therefore, in (31), we add the presupposition to (25), indicating that p holds in the actual world (thus double negation reflects what is true about the actual world)..

(31) $p(w).\forall w' \in \cap Sim(w)\ [(\sim p(w') \subseteq \sim q\ (w')) \ \&\ (p(w') \subseteq q(w'))]$

7.2.3. THE SCOPE OF THE PHENOMENON

In section 6.2, it was proposed that, at some point in its development prior to the Babylonian stage, prenominal *ʾilmale* (in both Hebrew and Aramaic) underwent a syntactic reanalysis that transformed it into a preposition meaning "without$_c$". Elsewhere, *ʾilmale* retained its function as a clause-initial NCC marker. It is important to note that, when *ʾilmale* gave rise to expletive negation, as attested in the corpus of the Tosefta, this was necessarily restricted to the latter environment. It seems likely that this restriction is related to the fact that expletive negation is *syntactically* associated with sentential negation (which trigers two alternative propositions.) This requires the presence of a clause, which is not present when using a preposition

If this is the case, there was a stage at which an overt distinction existed between the prepositional *ʾilmale* and the clause-initial one, with the latter one allowing for expletive negation:

ʾilmale + NP without$_c$	*ʾilmale* (*lo*/*la*) +p COND.IRR.NEG NEG$_{EXP}$

This last point is highly significant in our context, as the next stage in the evolution of *ʾilmale* involved a change in its semantics, transforming it from an NCC marker into a marker of counterfactual condition unspecified for polarity. For reasons to be explained later, this change could only affect the clause-initial variant of *ʾilmale*, not the prepositional one.

To conclude, the first stage in the semantic change did not involve a reanalysis. While in reanalysis the surface structure (F) remains the same, in our case, an expletive negation was *added*. As we have seen, such an addition is well documented, and can be explained by the presence of NCC. We turn now to the second stage in the development: a reanalysis at the semantics level.

[32]According to Henderson (2010), in English it is the preposition *for* that triggers the factive presupposition associated with *if it were not for*. He argues that *for* signals a causal relationship between the condition and the consequent, and that the causality is responsible for the presupposition. He admits, however, that this is not the case in all languages, and *ʾilmale* is indeed an example of an NCC marker that does not contain an overt causal element. For Ippolito & Su (2014), NCCs involve marked negation, which Schwarz & Bhatt (2006) term "light negation." However, Bar-Asher Siegal (2015b, forthcoming) argues that it is not the light negation that produces the presupposition, but the other way around: the semantics of the counterfactual is associated with a certain kind of negation, namely external negation, which in German is manifested as light negation. An in-depth discussion of these issues is clearly beyond the scope of this study.

7.3 THE SEMANTIC REANALYSIS.

7.3.1 SEMANTIC REANALYSIS AND SUBSEQUENT ACTUALIZATION

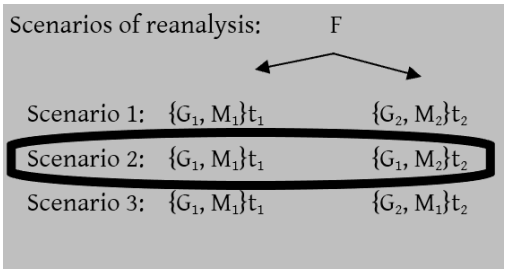
Initially, as evident from the corpus of the Tosefta (e.g., 20a-b), condition-clauses introduced by *ʾilmale* were always interpreted as negative, whether or not they contained an (expletive) negative element *lo/lā*. Over time, a semantic reanalysis apparently took place: the expletive negator came to be seen as the **source** of the negative meaning, whereas *ʾilmale* itself came to be seen as an expression of counterfactual condition, unmarked for polarity.[33] Once interpreted in this manner, in the Babylonian dialects, *ʾilmale* could introduce either a PCC (32a) or an NCC negated by *lo/lā* (32b).

(32) a. *ʾilmale* *ʾani* *ḥay* *w-hu* *met*
COND.IRR 1.SG alive and-3.M.SG dead.M.SG
"If I were alive and he were dead…" (Babylonian Talmud, Berakhot, 27b).

b. *ʾilmale* *lo* *nicṭanen-u* *geḥāl-im*..
COND.IRR NEG cool.PST-3.PL ember-PL
"If it were not for the fact that the embers cooled" (Babylonian Talmud, Yoma, 77a).

The process described here is clearly one of semantic reanalysis at the level of the specific item. The same sequence (*ʾilmale lo*) was initially understood as containing a bound negative morpheme (within the word *ʾilmale* itself) but lacking an independent and meaningful negative element (since *lo* is expletive). In the next stage this sequence was reanalyzed as a conditional element unmarked for polarity, followed by a semantically-meaningful negator (at this point the historical connection between *le* and the negator *lā* was clearly not identified, and the entire form *ʾilmale* carries two functional meanings. The "." in COND.IRR indicates that the boundaries between the components were not identified.)

From a lexical semantics perspective, this is an example of Scenario 2 in Figure 1: a semantic shift unaccompanied by a change in the grammar, as all the components retain their grammatical category and there is no substantial shift in the syntactic structure of the clause.



[33] This development can also be captured using Langacker's (1977) notion of "resegmentation."

Why did this semantic reanalysis occur? Some might object that this is not a legitimate question, as reanalysis is possible whenever a single form has two possible analyses, and that whether it actually occurs is a an arbitrary fact. However, such a change seems to not be accidental, as a reverse case of reanalysis, in which a meaningful negative element is reanalyzed as an expletive is never attested.[34] It, therefore, seems reasonable to posit that another force is at play here: a general cognitive-semantic principle that prefers an analysis in which **every overt element contributes to the meaning.** This can also be seen as part of an even broader principle, which motivates speakers to prefer analyses that assign the "usual" interpretation to elements, rather than "unusal" ones, namely Detges & Waltereit's (2002) principle of transparency, which states:

> **Principle of transparency:** Match the sound chain you hear with other sound chains of the language that you already know. (p. 159)

This principle is based on basic semiotic assumption that identical functions are expressed by identical forms, and vice versa. As a result, expletive negation is susceptible to undergo reanalysis as meaningful negation, but not vice versa. Therefore, this case illustrates that when there is a clear independent motivation for reanalysis, it is expected to be unidirectional. This brings us back to one of the fundamental questions about reanalysis (see Section 2), and it shows that at least in some cases there are motivations for unidirectional reanalyses.

It is important to note that not all expletive negative elements are expected to be reanalyzed as meaningful negators. The reanalysis of *lo* in *ʾilmale lo* as a negator occurred only because the marker *ʾilmale* originally contained a bound negative morpheme, whose meaning was eventually "transferred" to the independent negator (which was previously an expletive). Therefore, it can be predicted that reanalysis of this type will only occur with the class of logical operators, like *ʾilmale*, that have a negative element as part of their meaning (Category C in Table 1). Thus, we may conclude that it became evident that certain forces drive the development of expletive negation, and these forces may contradict the Principle of Transparency. Consequently, whenever expletive negations can be reinterpreted as sentential negation, they are likely to undergo a semantic reanalysis.

However, once completed, this reanalysis gave rise to sentences containing *ʾilmale* without *lo* that were understood as a polarity-neutral counterfactual conditionals. This is the **actualization** stage of the reanalysis,[35] at which the (grammatical or semantic) consequences of a preceding reanalysis are

[34] In this context, I am specifically referring to cases of expletive negation as discussed earlier. I am not including in this discussion the cases of the Jespersen Cycle, where a reanalysis occurs, and a lexical element that initially functions as an emphatic independent expression is reanalyzed to express negation. In our case, it is a negator that appears in the sentence but does not function as one. However, I want to acknowledge that in Jespersen cycles as well, a historical negator can lose its semantic contribution and, in effect, become an expletive negation (cf. Matteo's (2019) twofold classification of expletive negation.)

[35] See Timberlake (1977) and Harris & Campbell's (1995: 77) definition of the term "actualization". For a review of the literature on this concept, see Andersen (2001a). Interestingly, Hansen (2021) observes that, unlike reanalysis, which is a hearer-based process, as it is related to interpretations that are at odds with what speakers intended, actualization is speaker-driven, as it involves the implementation of a previous reanalysis.

implemented, giving rise to new grammatical elements, such as non-negative *ʾilmale*. This actualization stage involves extension, as the reanalyzed elements appear in new environments that could not host this element in the earlier stage.

(33)

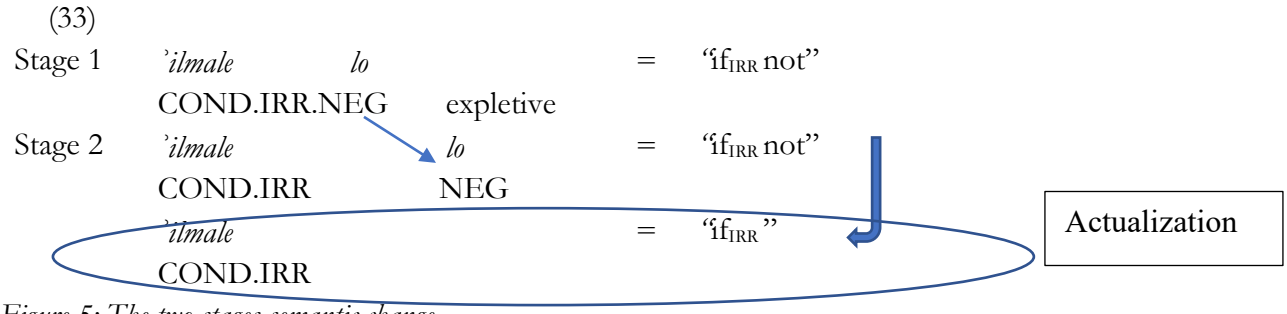


Figure 5: The two-stages semantic change

It is important to note that semantic reanalysis only leads to changes in truth conditions at the actualization stage. When examining the contexts in which semantic reanalysis occurs (in this case, the transformation of *ʾilmale* COND.IRR.NEG into COND.IRR), it is important to remember that, although we refer to this process as semantic reanalysis, it only affects the lexical semantics of individual linguistic elements. At the propositional level, the initial process of reanalysis does not alter the truth conditions of the proposition. However, during actualization, reanalysis generates new types of propositions with different truth conditions. It is at this stage that changes in truth conditions occur.

A similar observation was previously made (in Section 6.2.4) concerning the syntactic reanalysis of *ʾilmale*, where there was no alteration in the truth-conditional meaning. This observation gives rise to the Early Semantic Stability Hypothesis, which we introduced in Section 4. According to this hypothesis, reanalysis entails a transition from one analysis of an expression to an alternative analysis that does not initially modify the truth conditions of the overall proposition.

7.3.2 A SECONDARY SEMANTIC CHANGE: THE STRENGTH OF THE CONDITIONALS

The reanalysis *ʾilmale* and the actualization that followed it, described in the previous section, may have involved another, secondary, change in the meaning of this form.

Geis & Zwicky (1971) demonstrated that conditional sentences usually invite an inference of "conditional perfection." Considering the following conditional sentence:

(34) If you mow the lawn, I'll give you five dollars.

The sentence in (34) implies that the five dollars will not be forthcoming if the lawn is not mown. To put it more generally, sentences conveying "if X then Y" are generally understood to mean "if and only if (=iff) X then Y". But in certain contexts, this stronger biconditional meaning is cancelled (see van der Auwera 1997, Horn 2000):

(35) If John had received help from his teacher, he would have (definitely) passed the exam, but he might have passed anyway.

However, it has been observed that, in the case of negative counterfactuals, and especially those with designated NCC-markers, the strong (biconditional) relation is impossible to cancel (Henderson 2010, Ippolito & Su 2014), as demonstrated by (37):[36]

(36)

a. ??If John hadn't received help from his teacher, he would have failed the exam, but he might have failed anyway.
b. ??If not for the help of his teacher, John would have failed the exam, but he might have failed anyway.

Given this generalization, we would expect *ʾilmale* in positive contexts to have the weaker meaning. This prediction is apparently borne out: among the instances of *ʾilmale* in the Talmud, only in positive contexts do we find instances where "if and only if" is not implied, such as the following:

(37) *ʾilmale dibre-hem dibre torah w-dibre berabbi*
ʾilmale word.PL-POSS.3.PL word.of.PL torah and-word.of.PL *beribbi*
dibre qabbala ʾanu dibre berabbi šomʿ-in
word.of.PL tradition 1.PL word.of.PL *Beribbi* listen.PTCP-M.PL
w-kol še-ken še-dibre-hem dibre qabbala
even.more.so REL- word.PL-POSS.3.PL word.of.PL tradition
w-dibre berabbi dibre torah
and-word.of. .PL *Beribbi* word.of.PL torah
"Had their statements been [based on] statements of the Pentateuch, and the statement of the Distinguished One [on] tradition, we would listen to the statement of the Distinguished One. **All the more so [given that] that their statements [are based on] texts of the tradition, while the statement of the Distinguished One is [based on] the statements of the Pentateuch"** (Babylonian Talmud, Ḥullin 137b).

In this example, the condition is evidently meant to be understood as weak rather than strong, because the phrase in bold explicitly states that the consequent would be true even if the condition was false. Obviously, the absence of similar examples with earlier cases of negative *ʾilmale* is not proof that they did not exist, but it is nevertheless suggestive.[37]

If the loss of the strong conditional meaning did indeed occur, it aligns with the cross-linguistic distinction between NCCs and PCCs, and illustrates that changes motivated by language-specific

[36] For Ippolito & Su (2014) the fact that negative counterfactuals have non-cancellable conditional strengthening has to do with the semantics of the negation in this environment (see above f. 20); and according to Hendersen (2010) it is related to the ontic causative meaning that comes with NCC. It is beyond the scope of our current study to explain the differences between the various constructions, it only matters that the data in Babylonian Hebrew and Aramaic conform to this generalization.

[37] For a description of the corpus on which the present study relies, see Bar-Asher Siegal (2019).

factors are still governed by universal semantic constraints. This implies that semantic reanalysis is influenced by universal considerations and possibilities.

This discussion brings us back to the question raised in Section 2 about whether there are universally available interpretations that influence semantic change. The previous section showed that the emergence of expletive negation and its interpretation as a meaningful expression were due to principles that have been documented across more than 700 languages. Additionally, the subsequent actualization is a logical consequence of these principles. If the final change also involved a weakening of the strength of the conditionals, this development may be influenced by universal principles that affect all languages.

According to the Early Semantic Stability Hypothesis, as presented in Section 4, it primarily focuses on the initial stage of the shift in meaning, where reanalysis occurs without altering the truth conditions. However, as the lexical meaning undergoes changes, other forces may come into play, even in cases where they do impact the truth conditions. In our specific case, we observe that logical consistency can supersede the principles that would normally hinder changes affecting the truth conditions.

8. Solving the puzzle.

The analysis earlier discussed provides an explanation for the difference in the use of the term *ʾilmale* in Hebrew and Aramaic in the Babylonian Talmud. Specifically, it answers our conundrum and explains why *ʾilmale* is negative when it comes before a noun (*ʾilmale* + NP) but polarity-neutral when it is in clause-initial position (*ʾilmale* + p) (2-3). The reason for this is historical: *ʾilmale* was originally a marker for a NNC marker with a built-in negative operator. Later, it was first reanalysed as the preposition "without$_c$" when used before a noun (*ʾilmale* + NP). Then, the use of *ʾilmale* in clause-initial position (*ʾilmale* + p) underwent a semantic reanalysis that made it a polarity-neutral conditional marker.

The reason for this reanalysis being restricted to clause-initial *ʾilmale* is due to the emergence of expletive negation,[38] which was reanalysed as meaningful negation.

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[38] In his analysis of the distribution and meanings of *ʾilmale*, Ben Hayyim (1952-1953) posits that, in the absence of an overt negative element, *ʾilmale* began losing its negative meaning, prompting speakers to begin adding the negative element *lo*. However, this raises the question of why *lo* is not added to sentences with *ʾilmale* before a noun, which Ben Hayyim considers to be nominal sentences. He explains this by stating that "Hebrew nominal sentences (including in Rabbinic Hebrew) are not negated with 'lo' but rather with 'ein'" (p. 29, translation is mine).
However, Bar-Asher Siegal (2019: 107-108, n.44) argues that Ben Hayyim's analysis does not align with the data, as *ʾilmale* only retained its negative meaning in prepositional phrase (PP) environments. In other nominal sentences, it underwent the same changes as in verbal ones. Furthermore, if Ben Hayyim's explanation were correct, we would expect to find expletive negation in all contexts (including before nouns). But in all contexts where *ʾilmale* must be negative, *lo* is not used, indicating that it is not a matter of the transparency of the negation, as proposed by Ben Hayyim.
Breuer (1987) suggests that Ben Hayyim's explanation also applies to *ʾilule* followed by a clause headed by the subordinator (*ʾilule še-*), or, in his words, "before a verb with the relativizer 'še-' which essentially functions as a nominal form" (Breuer 1987, p. 130, translation is mine). This explanation is odd, because Ben Hayyim's analysis relies on the distribution of the negative element *ein*, which is irrelevant to these clauses. A more plausible explanation relies on Lambert's (1880) claim that *ʾilule še-* in these contexts is a conjunction meaning "without$_c$." If this is the case, the analysis proposed in this study is applicable to these cases as well.

However, the process proposed earlier for the development of expletive negation only applied to clauses that express a proposition capable of being negated and can split the possible worlds into those where they hold and those where they don't.[39] In contexts where *ilmale* was used as a preposition, expletive negation could not appear and therefore did not undergo reanalysis. This explains the current distribution of *ʾilmale* as seen in examples (2)-(3). The historical changes that led to this distribution are illustrated in Figure 6.

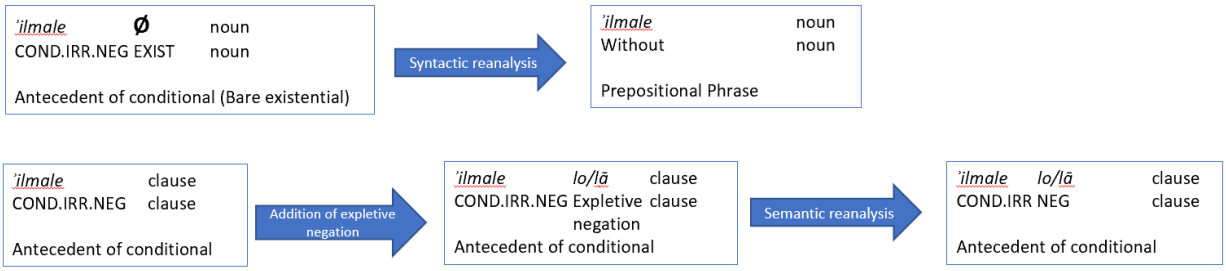

Figure 6: A summary of the historical changes of ʾilmale

9. Summation and conclusions about reanalysis

The formal description of reanalysis adopted in Section 3 is independent of any assumptions about the nature of the phenomenon. By applying it throughout the study, I was able to trace the differences between various types of reanalysis in the history of *ʾilmale* in Hebrew and Aramaic. I would like to briefly discuss how these diachronic changes provide insights into the broader questions about reanalysis mentioned at the beginning of the article (Section 2).

What is reanalysis?

Reanalysis, as formally defined in Section 3, is first and foremost a name for a *relation* between pairs of grammars of the same language in two consecutive points in time. (Grammar is used here in the broad sense of the term, including both G and M, in our terminology.)

This is a characterization of historical changes which are not manifested at the surface level of the language (F). Reanalysis, accordingly, constitutes a type of relation between grammars. It is not necessarily a single phenomenon: it can be at the lexical semantics level of certain expression or at the grammatical level or in other level of analysis, and it can be motivated by various principles that influence how speakers interpret the surface level of their language.

Possible motivations

[39] Horn (2001: 280) considers words such as ***un****bound****less*** and *ungui****lt less***, which contain two negative morphemes, to be interpreted as negative rather than as cases of double negation, as cases which express redundant or pleonastic negation. However, these are not counterarguments to the claim that expletive negation occurs at the sentential level, since they are cases in which the negator is expressed twice instead of once for various historical and expressive reasons

Throughout this article, various motivations for different developments were suggested. For example, the reanalysis of prenominal *ʾilmale* as a preposition may be motivated by the desire for structural simplification, as it transforms a complex bi-clausal structure into a simpler, uni-clausal structure with a prepositional phrase (6.2.3). Another motivation for reanalysis may be a preference for an analysis in which every overt element contributes meaning, as seen in the reinterpretation of the expletive negation as a meaningful negator (7.3.1). This is not an exhaustive list of motivations for reanalysis, but it illustrates how certain types of reanalysis can have specific, local motivations.

When a reanalysis can be motivated, it tends to be unidirectional, with only one of the analyses developing in the presence of the other. For example, it is more likely that an expletive negation will undergo reinterpretation as a meaningful negation, but not vice versa. Similarly, if structural simplicity is a motivation for change, it is unlikely that a simple, uni-clausal structure would turn into a complex, bi-clausal one.

These observations do not mean that all reanalyses must necessarily be unidirectional. Nothing rules out the possibility that certain environments will allow bi-directional changes, and nothing prevents unmotivated changes from taking place as well.

The origin of the new grammar

The phenomena discussed in this article suggest that the answer to the question whether the new interpretation must be "familiar" to speakers in some manner, is not straightforward. As we have seen, reanalysis does not necessarily reproduce a pattern that already exists in the language or even in another language, but depends on semantic interpretations made available by the grammar of the language in which it occurs.[40] For example, the historical reanalysis discussed in Section 6.2 produced a "strange beast" (a preposition that means "without$_c$", restricted to environments carrying an implicature associated with NCCs) that is unique in the inventory of linguistic forms. In other words, although both syntactic interpretations were available at t_1, the association between G_2 and M_1 at t_2 was new, using the terminology in Figure 1.

Universal factors

While there are reanalyses that were not present before historical changes (neo-analyses), universal factors may still be at work, helping to explain the complete spectrum of changes. In our study, for instance, based on our data, we have realized that the observation that *ʾilmale* conveys the logical relation of "if and only if" in its negative interpretation, but not in its positive interpretation, can be attributed to a universal phenomenon (see Section 7.3.2). Likewise, the emergence of expletive negation in NCCs (with a designated conditional marker) can be linked to a general phenomenon rooted in the strong presupposition that the condition holds in the real world (see Section 7.2.2).

Additionally, in our investigation (Section 6.2.2), we noted that when *ʾilmale*+NP is interpreted as "without$_c$," it acquires a bi-eventive interpretation, accompanied by a causal inference. This interconnection between bi-eventivity and causal inferences might be influenced by certain universal principles at play.

[40] Cf. Detges & Waltereit's (2002: 170) conclusion that "reanalysis does not require a previous structural ambiguity. Such structural ambiguity is *created* by reanalysis".

In summary, while reanalyses may introduce novel interpretations in historical changes, we find that the broader array of changes can, to some extent, be comprehended through the lens of universal principles that underpin various linguistic phenomena.

Restrictions

While different reasons can motivate the emergence of new analyses, it seems reasonable from a communicative perspective to restrict what can become a new analysis, as otherwise language may change and become unreliable. In Section 4, the Early Semantic Stability Hypothesis was proposed and motivated, which restricts the environments in which such changes are possible to cases when the two analyses share the same truth-conditions.

To conclude, our case study showed how a variety of motivations can lead to reanalysis, and that the new analysis can be available in different ways prior to the historical change. There also seem to be various universal forces and other constraints that limit the range of possible new analyses. Reanalysis, therefore, is not a single phenomenon. It can involve different linguistic modules and can be either motivated or unmotivated. However, it is also proposed that all reanalyses should be constrained by principles governing human communication. Thus, they are constrained, even if they might be considered as "mistakes."

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