



Rodrigo Hernáiz*

The grammaticalization of manner expressions into complementizers: insights from Semitic languages

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Abstract: Complementation strategies in both ancient and modern Semitic languages include the use of a series of cognate complementizers typically sharing a *k*-element: e.g., Tigrinya *kām*, Modern Hebrew *kī*, Akkadian *kī(ma)* or Ge'ez *kama*. The sources and the developments that led to the complementizer use of these multi-functional *k*-subordinators are not sufficiently clear, and diverse interpretations have been proposed. The present article analyses the oldest written record of *k*-complement markers in Semitic, focusing on Old Akkadian, Old Babylonian and Old Assyrian. The analysis of the type and distribution of complement constructions suggest a different explanation for their development based on the grammaticalization of similitive manner expressions, a process attested in Afro-Asiatic and other languages. The article also highlights the presence and potential role of nominal complementation among the earliest recorded forms of complementation in Akkadian. The data presented here provide insights into the origin of *k*-complementizers in Semitic languages with less ancient written evidence, from Ancient Hebrew to Ethiosemitic.

Keywords: complementation; grammaticalization; manner expressions; Semitic languages; similitives

1 Introduction

Complement markers in a number of Semitic languages typically feature a common *k* element: Modern Hebrew *kī*, Tigrinya *kām*, Tigre *kam*, Wolane *-kō*, Ge'ez *kama*, Sabaic *k (dy)*, Biblical Hebrew *kī*, Phoenician *kī*, Old Aramaic *k(y)*, Ugaritic *k(y/m)* and Akkadian *kī(ma)*. The presence of these *k*-complementizers is documented over a

*Corresponding author: **Rodrigo Hernáiz**, Languages and Linguistics, The Open University, Walton Hall, MK7 6AA Milton Keynes, UK, E-mail: rodrigo.hernaiz-gomez@open.ac.uk

staggering period of more than four thousand years, attested in a variety of branches of the Semitic group, from ancient Northwest Semitic (1) to present-day Ethiosemitic (2):

- (1) *w id' k hy aliyn b'l*
 and 1SG.KNOW COMP alive mighty Baal
 'And I know that mighty Baal is alive'
 (Ugaritic; Dietrich et al. 2013: 29)
- (2) *ḥatom 'āmāraw la-mādarraš kam ḥazza-yom*
 they.M 3PL.M.KNOW DEF-teacher COMP 3SG.Want-3PL.M
 'They know that the teacher wants them'.
 (Tigre; Elias 2014: 78)

These markers are multifunctional, typically introducing adverbial as well as complement clauses (cf. Pat-El 2008: 59). Their ADV-subordinator function is commonly thought to derive ultimately from *k*-adpositions (cf. Deutscher 2000: 38), which are virtually present across all subdivisions of Semitic. However, the question about the development of *k*-complementizers in different Semitic languages remains unresolved.

Nevertheless, there is a growing wealth of written documentation for Akkadian varieties dated ca. 4300–3500 years ago, which considerably predates any other Semitic record. The emergence of finite complementation in one of these varieties, Old Babylonian, was analyzed in Deutscher (2000), but further evidence from Old Akkadian and Old Assyrian call for a reassessment of the data: can the oldest available record of Semitic inform us about the origin of *k*-complementation? This article aims to examine the patterns of distribution and frequency of complement clauses in these early Semitic corpora, to explore whether they can reveal any semantic or syntactic footprint from source constructions and whether such patterns can be subsequently compared to later-attested Semitic languages.

One explanation for the development of *k*-complement constructions assumes that causal *k*-subordinators are the direct source of Akkadian complementizer *kīma* (Deutscher 2000) and Biblical Hebrew complementizer *kī* (Givón 1991: 296; Zuckermann 2006: 81). A potential reanalysis of pre-existing causal clauses (3) into factive complement constructions (4) is illustrated in Deutscher (2000: 42):

- (3) *He said/spoke to the governor **because** (k-marker) the barley was not collected*
- (4) *He said/spoke to the governor **that** (k-marker) the barley was not collected.*

While in Akkadian this reanalysis is assumed to arise via semantic bleaching in the context of speech-related predicates, Givón's (1991) proposal for Biblical Hebrew (BH) is different. It implies a 'because-factive' pathway of transfer for factive/

presuppositional predicates such as *be.happy* or *regret*, where the situation coded in the complement clause is also the inherent cause of the state/event of the matrix clause.¹

An alternative view suggests that *k*-complements developed from comparative constructions. For Akkadian, Streck (2002: 142) argues that a ‘comparative’ *kīma* is more likely to be the direct source of *kīma*-complementizer, something tacitly assumed in previous literature (cf. Hecker 1968: 254). Comparing modern Tigrinya with Akkadian, Tewolde (2006: 882–883) argues that complementizer *kām* also developed from some ‘adverbial function of comparison’, but assumes that this stands in contrast to a causal/temporal origin of the Akkadian complementizer *kīma*. Interestingly, complement markers in a number of modern Ethiosemitic languages (including Tigre *kam* or Wolane *-kō*) are widely considered a grammaticalized development of simulative morphemes or manner demonstratives, a feature spread across the whole Ethiopian Linguistic Area (Treis 2020).

For a better understanding of *k*-complementation in its oldest Semitic attestations, an analysis of the type and frequency of sentential complementation in early Akkadian corpora is presented in Section 2. Section 3 discusses how different observations fit into possible models for the emergence of Semitic *k*-complementation, focusing on how nominal complementation, polar dependent questions and other constructions suggest a SIMIL>COMP grammaticalization scenario. Section 4 summarizes the findings and suggests potential lines of evaluation for other Semitic evidence.

2 Complementation in the Akkadian corpora

There are two main reasons for turning our attention to Akkadian. First, it provides the earliest Semitic record (apart from poorly documented Eblaite and Amorite): some corpora predate Biblical Hebrew texts by more than a millennium. Despite such time depth, some varieties of Akkadian are very well documented. For example, it is estimated that the Old Babylonian record contains ca. 50.000 texts (Streck 2022: 2). The second reason is the claim that Akkadian documents the emergence of finite sentential complementation, from stages lacking this type of syntactic strategy (Deutscher 2000). This is unlike other Semitic languages, where complementation is already in place from the beginning of their extant record.

¹ On a later revision, Givón (2015) offers a different analysis suggesting the opposite process: *kī*-complements might be the source of *kī*-causal clauses in Hebrew.

Akkadian is a term that encompasses closely related East Semitic *doculects* ('documented lects')² attested for more than 2,000 years in a wide area around the modern state of Iraq. Old Akkadian (OAKk) chronologically precedes two better-documented varieties: Old Babylonian (OB) and Old Assyrian (OA). Later varieties such as Middle or Neo-Babylonian will not be considered in this study.³

The present analysis of OAKk, OB and OA is based on three corpora (see Appendix): The OAKk corpus studied in Deutscher (2000: xv), which includes 113 letters and was oriented towards data completeness; an annotated OB corpus with a representative sample of 2020 letters; and a representative small OA corpus containing 362 letters collected from Michel (2001).

2.1 Did OAKk lack finite complementation?

It is widely assumed that the OAKk record provides evidence for:

- the existence of causal clauses introduced by *kīma*, and
- the non-existence of finite *kīma*-complementation.

However, these assumptions are challenged by textual evidence. As pointed out in Hernáiz (forthcoming), the size of the corpus analyzed in Deutscher (2000) is not sufficiently large to demonstrate the absence of finite complementation in OAKk.⁴ Deutscher (2000: 102) acknowledges this limitation but argues that: (i) in OAKk we still “find paratactic constructions in places where we would expect to find finite complements”; and (ii) finite complements are neither attested in the first part of the subsequent OB period.

The latter argument faces a documentation bias similar to that of OAKk: the textual record from the very earliest OB period is relatively small. However, as soon as we have a substantial amount of *early* OB texts at our disposal, we find a considerable number of examples of *kīma*-complementation.⁵ The other argument, illustrated by the claim that in OAKk, ‘know’ (the most frequent complement-taking predicate in Akkadian) “is only attested with asyndetic parataxis” (Deutscher 2000: 104), is not supported by quantitative evidence: the OAKk corpus of letters analyzed

² Cf. Cysouw and Good (2013).

³ Poorly attested Pre-Sargonic and Ur III-Akkadian (III millennium BCE) are also not considered in this article.

⁴ This corpus consists of a small number of texts (cf. Appendix), which are also relatively brief: for example, the body of texts from Kienast and Volk (1995) average less than 25 “words” per text.

⁵ For example, in George’s (2018) ‘early OB’ texts n. 39, 54, 75, 83 and 86.

Table 1: Approximate chronology of OAkK, OB and OA.

ca. 2350–2150 BCE	Old Akkadian (OAkk)	
ca. 2000–1500 BCE	Old Babylonian (OB)	Old Assyrian (OA)

only attests to one occurrence of ‘know’ in parataxis (a construction which does continue to appear in later OB texts).⁶ Furthermore, only two more tokens of predicate ‘know’ are found in this corpus: one with a nominal object (i.e., not a paratactic construction) and another one in a fragmentary context, analyzed as a probable complement construction by Streck (2002: 141).⁷ Crucially, new textual evidence has recently confirmed the attestation of finite complementation in OAkK:

- (5) *u anāku kīma ša’pē-ya yukall-u īda’*
 but I COMP foot.DU-my 3SG.holds-SUBR 1SG.know
 ‘But I know that he will hold my feet’
 (OAkk; Kraus 2018: 3; Arbøll and Westenholz 2019: 157)

This textual evidence dismisses the claim that Akkadian finite complementation emerged exclusively in the subsequent OB period. Whether the type and the frequency of V-complement clauses in OAkK were significantly different from that of later OB cannot be sufficiently assessed, due to the limitations of the extant OAkK record.

The assumption that *kīma*-complementation developed from a reanalysis of pre-existing causal ADV-clauses is also challenged by the lack of sufficient evidence of causal *kīma*-clauses in the OAkK corpus. Only two potential occurrences of *kīma*-causal clauses in OAkK are known to me, but they are both uncertain: they appear in broken texts where the matrix predicates are missing.⁸ Furthermore, Stola (1972) and Streck (2002) show that in the subsequent OB period, polysemous *kīma* is only sporadically attested as a causal adverbializer (Figure 1).

If we take the written occurrences of *kīma*-clauses in the well-attested OB period as representative of the linguistic situation at that time, causal *kīma*-clauses can be considered infrequent, relative to comparative, complement or temporal *kīma*-clauses. An alleged CAUSE>COMPL process in OB from causal *kīma*-clauses, would then require an infrequent causal construction to be reanalyzed as a complement. Such argument would conflict with some common views on grammaticalization processes, whereby frequency is considered a primary contributor and “an active

6 Cf. OB texts CUSAS 36, 48 or CUSAS 36, 198 (George 2018: 48 and 161).

7 Kienast and Volk (1995: 91 [Gir 19, 41] and 132 [Um 3]).

8 Frayne (1993, 91) and Hackl (2007, 23).

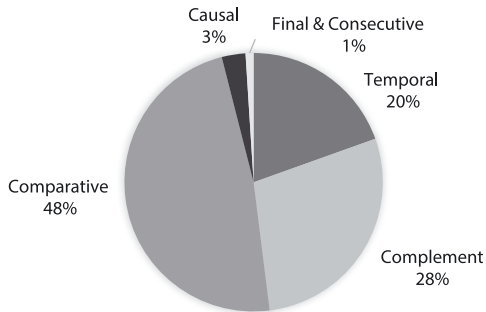


Figure 1: Percentage distribution of OB *kīma*-clauses ($N = 302$), after Stola (1972: 70).

force in instigating the changes” (Bybee 2003: 602), and does not explain why such reanalysis would be built on rare OB causal *kīma*-clauses, instead of on the ubiquitous causal clauses marked by *aššum* (Streck 2002: 142).

2.2 The OB corpus

The observations in Section 2.1 indicate that the earliest documented stage of Akkadian (Oakk) already attests to multifunctional *k*-makers in complementizer function, a situation similar to that of other ancient Semitic languages. Therefore, diachronic inferences on early Akkadian *kīma*-complementation can only be based on crosslinguistic data or on the analysis of synchronic corpora – recorded *after* the change took place – where relevant distributions of complement-taking predicates (CTPs) might still reflect original ‘bridging contexts’ (Schmidtke-Bode 2014: 242–243).

The subsequent OB period offers extensive written documentation for analyzing Akkadian *kīma*-complementation in texts. This section provides an assessment of the type and distribution of CTPs in a representative corpus of ca. 2000 OB letters from around 3600–3800 years ago (see Appendix). Figure 2 shows the number of instances of *kīma*-complement clauses with the most frequent CTPs in the OB corpus (see data distribution in the Appendix).

The predicate ‘know’ stands out in absolute number of occurrences (61). However, this could potentially be the result of documentation bias if, for example, ‘know’ were a particularly frequent verb in letters. To control for this possibility, Table 2 shows the total number of tokens for each CTP in any type of construction, and the percentage of these tokens that occur in finite *kīma*-complement constructions. This allows for a more adequate assessment of the different ratios by which complement-taking predicates (KNOW, SPEAK etc.) engage in complement constructions.

Table 2: Percentage of *k*-complement clauses per total number of instances of CTPs in the OB corpus.

CTP	<i>N</i>	<i>N. COMPL</i>	%
KNOW	199	61	30.65 %
PROVE	29	5	17.24 %
HEAR	104	4	3.85 %
SPEAK/SAY	620	19	3.06 %
SEE	286	7	2.45 %
LEARN	156	3	1.92 %

Bold values indicate key data for the subsequent discussion.

While ‘know’ and to a lesser degree ‘prove’⁹ occur in different types of syntactic structures, a considerable proportion of them are complement constructions. Interestingly, ‘speak/say’ occurs very frequently in the corpus ($N = 620$),¹⁰ but is proportionally rare in complement constructions (3.06 %).¹¹ Instead, direct speech strategies are clearly favored (Deutscher 2000: 115). Nevertheless, the CAUSE>COMPL hypothesis assumes a syntactic reanalysis in OB, when “speech-related verbs formed the bridging context in the process of semantic bleaching of the conjunction *kīma* from a causal adverbial to a factive complementizer” (Deutscher 2000: 116). If one expects the locus of reanalysis to be associated with frequently attested CTPs, the data distribution in Figure 2 and Table 2 do not meet expectations.¹²

It should be recalled that causal *kīma*-clauses are marginal in the OB record. Consequently, the alleged semantic ambiguity (‘bridging context’) between *infrequent* causal *kīma*-clauses and *infrequent kīma*-complements with speech verbs is problematic, defying the CAUSE>COMPL explanation for the emergence of *k*-complementation in OB. Similarly, instances of *kīma*-complements with the most

9 Instances of predicate *bārum* in D-stem meaning (‘prove’).

10 The data in Table 2 do not even include the large number of paratactic instances of ‘say/speak’ in formulaic letter headings (‘speak to X’). Also excluded are morphological configurations of reciprocity in *amārum* (‘see’), meaning ‘meet’.

11 A chi-square test of independence performed to examine the relation between KNOW and SPEAK (in terms of their engagement in complement constructions) shows a highly significant difference between both predicates: $\chi^2 = 130.09, p < 0.00001$. The independence is also significant for PROVE and SPEAK ($\chi^2 = 15.64, p < 0.000077$), but not for the distribution of KNOW and PROVE complements ($\chi^2 = 2.21, p = 0.136796$). This demonstrates that, in the corpus, SPEAK occurs significantly less often in complement constructions (relative to other constructions) than KNOW or PROVE. The last two, however, are more comparable in their ratios of engagement in complementation.

12 Deutscher (2000: 116) also acknowledges that utterance verbs are not frequently found in OB complement constructions but speculates: “even if speech verbs were instrumental in the process of change from causal adverbial clauses to finite complements, the *kīma* clauses with speech verbs may not have become fully emancipated from their original causal meaning”.

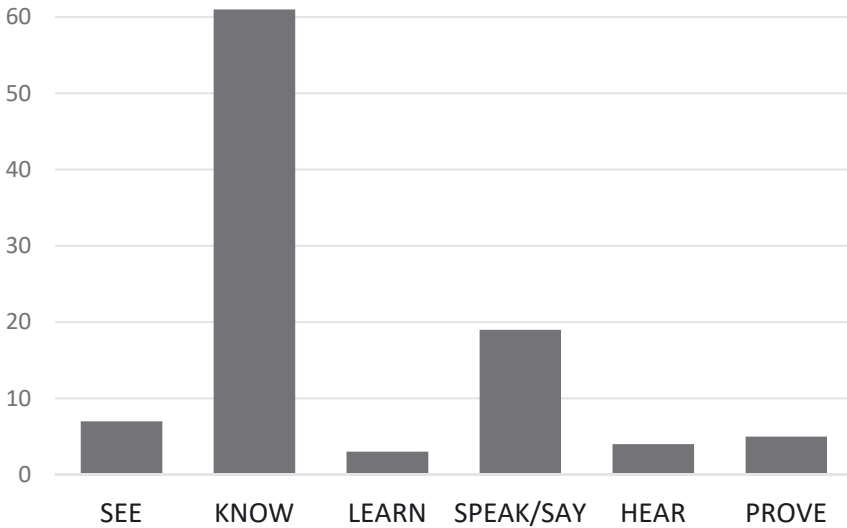


Figure 2: Instances of CTPs with *k*-complement clauses in the OB corpus analysed.

frequently attested CTP, ‘know’, can hardly be ambiguously interpreted as causal clauses. For example, 79 % of ‘know’ complements in the corpus are negative instances, often translated as rhetorical questions:

- (6) *kīma še'-am la išū atta ula tīde*
 COMP barley-ACC NEG 3SG.have.SUBR YOU NEG 2SG.know
 ‘Don’t you know that he has no barley?’
 (OB; George 2018: 52)

As opposed to utterance CTPs in proposed models (3) and (4), instances like ‘*you don’t know that (...)?*’ do not easily allow for a semantic overlap with causal meanings like ‘*you don’t know because (...)?*’. Moreover, there is no textual evidence suggesting that speech-related complements predate other finite complement constructions in Akkadian.¹³ It is therefore worth considering other scenarios for the emergence of complementation.

Streck (2002: 142) shows an alternative to the CAUSE>COMPL hypothesis, suggesting ‘bridging contexts’ in which *kīma* can be understood both as ‘comparative’ and complementizer. The examples given are of the type in (7) and (8) below.

¹³ The OAkK complement in (5) and the probable instance mentioned in Streck (2002: 141) have ‘know’ as CTP.

- (7) *G[imillum] weiß, wie/daß [kīma] das Schiff gesunken ist.*
 [PN knows how/that the ship sank]
 (Streck 2002: 142)
- (8) *Weißt du nicht, wie/daß [kīma] ich unter Druck stehe?*
 [Don't you know how/that I am under pressure?]
 (Streck 2002: 142)

In these cases, the type of CTPs most prominently attested in the OB corpus ('know') could fit well with a potential extension of procedural-knowledge constructions into declarative knowledge complements (even though they are semantically very different, cf. Schmidtke-Bode 2014: 41). But the question is: what kind of 'comparative' expressions might be reanalyzed as complement constructions? The examples mentioned in Streck (2002) seem to suggest a direct reanalysis of manner 'how'-QUESTION constructions into V-complements, a crosslinguistically well-known phenomenon (cf. Kehayov and Boye 2016; Legate 2010; López-Couso and Méndez-Naya 2017). As Güldemann (2008: 458) explains, "a statement about HOW an event has happened implies THAT it took place. Thus, it is quite conceivable that a manner clause linker can acquire complementizer functions directly".

Nevertheless, the 'how'-QUESTION>COMPL path is also faced with a problem: the lack of ambiguity between embedded 'how' and *k*-complementizers in Akkadian and other ancient Semitic languages. While it could be speculated that in an earlier (undocumented) stage of Akkadian, a *k*-element marked both embedded 'how'-QUESTIONS and complements, there is no evidence for it. In OB, neither *kīma* nor *kī* are unequivocally attested as markers of indirect questions (Huehnergard 2011; Oppenheim 1971; Von Soden 1965; Von Soden and Mayer 1995). Cohen (2013: 76) suggests that a few OB occurrences of *kīma* with the predicate 'ask' might express indirect questions, but such examples are widely regarded as 'ask whether' polar question complements (Deutscher 2000: 14). Furthermore, 'resolutive' or 'free relative' manner questions (Nye 2013) – as in '*PN knows (the way) how the ship sank*' – are not functions for Akkadian *kī/kīma* described in the literature. For example, the monumental Chicago Assyrian Dictionary (CAD) includes different English translations for conjunctions *kī/kīma* ('as', 'according to', 'in the manner of', etc.), but does not attest to examples to be translated as 'how' or other manner 'relative' expressions in object function.¹⁴

Whilst the Akkadian record documents *k*-elements in direct 'how?' questions but not undoubtedly in embedded 'how'-QUESTIONS, other ancient Semitic languages

¹⁴ Note that conjunctions *kī/kīma* are sometimes translated as 'in the manner of' in CAD, but they occur in ADV-clauses with a comparative nuance (as in: 'do it *in the way that* ...'), rather than 'how' relatives in object position (as in: 'I know *the way that*...') (cf. Oppenheim 1971).

simply lack an identity between ‘how’-QUESTIONS and *k*-complementizers that could lead to ambiguity and ‘bridging contexts’: Ugaritic *iy* and Ge‘ez *’affo* (‘how?’) are unrelated to *k*-complementizers, and Biblical Hebrew (BH) *’ek* is also unambiguously different to complementizer *kī*.¹⁵

The large OB record, therefore, does not provide clear evidence to support a reanalysis from either causal or ‘how’-QUESTION clauses into *kīma*-complementation. But there is another manner construction to be considered: *kīma* similative clauses. Stola (1972) finds the most frequent subordinating function of OB *kīma* to be ‘comparative’ (Figure 1), and most of his examples can be described as similative or simulative clauses. Particularly frequent is a type of qualitative comparison construction labeled by Deutscher (2000) “the ‘as you know’ construction”:

- (9) *kīma tīd-û alp-am ilqe*
 as 2SG.know-SUBR OX-ACC 3SG.take.PST
 ‘as you know, he took an ox’
 (Deutscher 2000: 98)

Deutscher (2000) takes these clauses as part of the “Functional Domain of Complementation” and compares them to finite complementation (10) and asyndetic parataxis (11).

- (10) *kīma alp-am ilq-û atta tīde*
 COMP OX-ACC 3SG.take.PST-SUBR you 2SG.know
 ‘you know that he took an ox’
- (11) *alp-am ilqe lū tīde*
 OX-ACC 3SG.take.PST EMPH 2SG.know
 ‘he took an ox, may you know!’
 (Deutscher 2000: 98)

According to Deutscher (2000: 101–107), the ‘as you know’ constructions are closer to finite complements (in terms of syntactic integration) than other coordinated or asyndetic structures of the functional domain of complementation.¹⁶ They not only stress the presupposed nature of the information, but also retain sometimes “the heavier and more complex clause as a main clause” avoiding too heavy and complex finite complements (Deutscher 2000: 108). This functional similarity has not been regarded as a clue to the emergence of complementation, but another type of

¹⁵ In OB, manner question *kī* (‘how?’) is not identical to complementizer *kīma* either, although the latter is formed from a *kī* element and occurs sporadically in the corpus as *kī* (as does in later Babylonian varieties).

¹⁶ Stola (1972: 93) also finds that both constructions share communicative goals expressed in different syntactic configurations.

parallelism between similitive and complement constructions has been considered. Deutscher (2000: Ch. 11.3) hypothesizes the development of finite V-complements specific for ‘proving’ verbs (seemingly independent from the CAUSE>COMPL path), where finite complements developed by the merging of two arguments: the person ‘accused’ (or ‘proven’) and the proven event. In this scenario: “[t]he use of *kīma* with the proving verbs derives from its role as an **equating particle**” (Deutscher 2000: 173, [emphasis added]). It should be noticed that even though ‘prove’ is not a frequent predicate in the OB corpus analyzed, it appears relatively more often in complement constructions than other CTPs, except for ‘know’ (Table 2).

Section 3 will expand on the relationship between similitive and complement clauses in Akkadian and other Semitic languages. But first, a pivotal corpus of evidence should be added to the equation: the Old Assyrian record.

2.3 Observations from OA

Textual evidence from OA offers an important perspective that has not been accounted for in previous studies on complementation. OA is more or less contemporary to OB (cf. Table 1), but its extant record is mostly around 100 years older than the bulk of the OB documentation, providing the oldest Semitic corpus of evidence of *k*-complementation that is not reduced to a few sporadic tokens. Finite *kīma*-complement clauses are indeed a normal feature in OA (cf. Hecker 1968: 257; Kouwenberg 2017: 810). This alone provides a further obstacle for the putative (mono-?)genesis of V-complementation in OB. But what can the analysis of the OA record contribute to the observations already made for OB?

There are several important points to note. First, causal ADV-clauses introduced by *kīma* are well attested in OA, unlike in OB (Stola 1972: 97). In principle, this could support the CAUSE>COMPL hypothesis. However, a ‘because-factive’ synchronic ambiguity cannot be easily perceived in OA texts. One reason is that OA *kīma*-causal and *kīma*-complement clauses differ in their syntactic tendencies: while ADV-clauses overwhelmingly precede the matrix clause, *kīma*-complements often follow it (cf. Kouwenberg 2017: 802). The analysis of a representative small OA corpus returned 12 instances of *kīma*-causal clauses – all of which precede the matrix clause – and 14 *kīma*-complement clauses, of which only one did not follow the matrix clause. Postponed complementation is not a feature exclusive to OA: it can be found occasionally in OB, and regularly in later varieties like Middle Babylonian. Precisely this migration towards post-matrix positions had been postulated as a later sign – with only sporadic OB cases – proving that *kīma* complements were eventually marked as

a distinct group from causal *kīma* clauses (Deutscher 2000: 50). However, OA systematically shows a different inter-clausal order that distinguishes V-complements from ADV-clauses in instances that predate the assumed date for change in OB.

Concerning the type and frequency of CTPs, Kouwenberg (2017: 820) summarizes: “Finite complement clauses are introduced by *kīma* (common) and *ša* (very rare). *Kīma* is the usual conjunction with the cognition verbs (...); it is common with *šamā’um* ‘to hear’ but rare with other perception verbs (...); and it is used occasionally with speech verbs”. These characteristics resemble the frequency and distribution of CTPs in OB, where the most prominent are also knowledge verbs. Moreover, the ‘common’ OA predicate *šamā’um* (‘hear’) is predominantly used with a hearsay meaning when it occurs in complement constructions, which is closer to evidential cognition/acquisition of knowledge than to direct perception (cf. Boye 2010). In the OA corpus analyzed here, two out of the three instances of *šamā’um* with finite complements occur in negative rhetorical questions of the type ‘have you not heard that...?’ resembling the typical complement structure of ‘know’ found in OB.

Utterance verbs, on the other hand, are occasionally attested with finite complements, but they overwhelmingly occur in ‘direct speech’ constructions (Kouwenberg 2017: 812). More importantly, in OA “indirect speech is rare with speech verbs but common [...] in complement clauses dependent on a noun” (Kouwenberg 2017: 833). Typical examples of such nominals are ‘document’, ‘instruction’ or ‘witness’, where *kīma*-clauses refer to the content of a message.

- (12) *u tērt-u-šu kīma luqūt-am ilqe-u*
 and instruction-NOM-3SG.POSS COMP goods-ACC 3SG.take.PST-SUBR
illik-am
 3SG.GO.PST-VEN
 ‘and his news arrived, that he had taken the goods’
 (Old Assyrian; BIN VI 85, 5–6)

What about ‘how’? Whilst manner questions (as W-QUESTIONS in general) are a well-known source for complementizers (cf. Kuteva et al. 2019), and a (modern) reading of OA *kīma* as an indirect manner question “how” does not seem inconsistent with many of the textual contexts of *kīma*-complement clauses, the OA record does not allow for manner-question/complementizer ambiguity. As in other Semitic languages, the form of the OA interrogative adverb *ke* (‘how?’) differs (synchronically) from that of OA complementizer *kīma*.¹⁷ Moreover, *ke* “does not seem to be used as a

17 For the vowel difference between *ke* and *kīma*, see Kouwenberg (2017: 388).

conjunction” (Kouwenberg 2017: 383), i.e., we do not find it introducing embedded manner clauses or indirect questions.¹⁸

3 Similative constructions and complementation

The Akkadian data presented in Section 2 shows that the emergence of finite complementation in Semitic cannot be specifically assigned to the well-documented OB period. The premise of an attested older stage lacking finite complementation is disproved by OAKk data, exhausting any *direct* evidence for the ‘when’ and ‘how’ of the emergence of *k*-complementation in Akkadian. Despite the lack of uncontested recorded evidence showing the emergence of *k*-complementation in Semitic, this section examines *indirect* evidence and suggests that inferences about the origin of *k*-complementation can be drawn. Although OB and OA data might be chronologically distant from the development itself, their corpora provide the most ancient – yet relatively abundant – evidence for study. Observations on these and other Semitic languages suggest that considering manner expressions as sources for *k*-complementation offers a more parsimonious explanation for some of the characteristics of the earliest samples of *k*-complementation.

First, it should be noted that common Semitic *k*-subordinators have been convincingly argued to derive from *k*-adpositions (e.g., Deutscher 2000: 37). These *k*-adpositions cover a wide range of meanings, but the similative (‘like, as’) features prominently in most Semitic languages. Not surprisingly, comparative/similative *k*-subordinators are also widespread in Semitic. On the other hand, *k*-markers expressing temporal/causal subordination might be considered a common Central Semitic feature (Pat-El 2008: 62) but they seem to be secondarily derived or hardly attested in a considerable number of Semitic languages with *k*-markers as main complementizers: OB (East Semitic), Ugaritic (Central Northwest Semitic),¹⁹ Sabaic (Central Sayhadic), Ge‘ez and Ginda‘ Tigre (Ethiosemitic) (Elias 2014; Stein 2013; Tropper 2012; Tropper and Hasselbach-Andee 2021; Von Soden and Mayer 1995).²⁰ Thus, the functional distribution of *kīma* in OB, for example, contrasts markedly with that of its Modern Hebrew cognate *ki*. While *ki* is the main causal ADV-clause marker and occurs rarely as complementizer in Modern Hebrew (restricted to specific

¹⁸ It is also uncertain whether the most common OA W-QUESTIONS (‘who?’, ‘what?’, ‘which?’ or ‘when?’) occur in indirect questions (Kouwenberg 2017: 827).

¹⁹ Bordreuil and Pardee (2009: 69) note: “Causal and resultative clauses are not nearly so frequent [in Ugaritic] as in Biblical Hebrew. Causal clauses, particularly, are often difficult to distinguish from temporal/circumstantial clauses”.

²⁰ For crosslinguistic claims that derive causal clauses from complement clauses see Hernáiz (forthcoming).

formal registers, cf. Nir [2013]), *kīma* is the main complementizer in OB and only appears to have a causal meaning in a relatively small number of cases. The similative meaning of *k*-subordinators, on the other hand, co-exists with complementizer meanings in old Semitic languages like Akkadian, BH, Ugaritic and Ge'ez. Similatives are also crosslinguistically known to grammaticalize into complement markers (Kuteva et al. 2019: 398), a phenomenon that is particularly recurrent in the Ethiopian Linguistic Area (Treis 2020). Within the Semitic group, the grammaticalization of similative manner expressions into *k*-complement constructions might be conjectured for Ethiosemitic (in the Ethiopian Linguistic Area), but also for varieties situated at the other end of the cladistic and chronological classification of Semitic.

The next subsections discuss further observations on finite complementation and similative constructions in old Semitic doculects.

3.1 Nominal complementation

As observed in Section 2.3, while OA presents a relatively low rate of V-complements with utterance verbs, it attests to *kīma*-clauses as complements of nominals such as ‘word’, ‘document’, ‘witness’ etc. These constructions usually denote some type of locution or represent messages amenable to be uttered:

- (13) *awīl-ū anni-ūtum lu šēb-ū-ka kīma*
 man-NOM.PL DEM-NOM.PL PREC **witness-NOM.PL-2SG.POSS** COMP
kasp-am ana ab-īa taddin-u
 silver-ACC to father-GEN.1SG.POSS 2SG.give.PST-SUBR
 ‘Let these men be your witnesses that you gave the silver to my father’
 (OA; Kouwenberg 2017: 822)

However, this is not a feature exclusive to OA. We find nominal complements of the same type in other Semitic languages, such as OB (Streck 2014: 120) and BH (13).²¹

- (14) *‘ēd hū bēnōtē-nū kī Yahweh hā-’ēlōhīm*
 witness he between-us COMPL Yahweh ART-god
 ‘It is a witness between us that the Lord is God.’
 (BH; Jos 22:34 [King James’ translation])

²¹ For potential cases of N-complements in Ugaritic, cf. the interpretation of KTU 2.39 in Pardee (2003: 382). The same instance is however regarded as direct speech in Olmo and Sanmartín (2003: 422).

The association between *k*-markers and nominals denoting locution persists in Modern Hebrew, where nouns such as ‘announcement’ or ‘claim’ may take *ki* as a complementizer, whilst other nouns can only take the marker *še* (Nir 2013). A type of N-complementation is also found in Sumerian (the isolate language with which Akkadian had a long history of contact), with a similar range of complement-taking nouns as OA: *dub* ‘document’, *inim* ‘word’, *lú inim-ma* ‘witness’ etc. (Jagersma 2010: 605). However, they occur as possessors in the nominal chain (with a genitive suffix):

- (15) *nusiki numakuš lú á tuku*
 orphan widow man power have.NFIN
nu=na-gágá-a DN=da PN=e inim-bé ka e-da-keše
 NEG=3SG-place.PFV-NMLZ.GEN DN=COM PN=ERG **word**=this.DIR mouth 3SG-COM-bind
 ‘PN made an **agreement** with DN about that he would not surrender orphan
 or widow to the powerful.’
 (Sumerian; Jagersma 2010: 605)

In OA, these N-complement clauses can also be marked by the REL-marker *ša* or the combination *ša kīma*.

- (16) *u tupp-u-šu harm-am ša kunukk-i-šu*
 and document-ACC-3SG.POSS enclosed-ACC REL seal-GEN-3SG.POSS
ša kīma ebibū-ni liqe-ā-nim
 REL COMP 3PL.become.clear.PST-SUBR take.IMP-3PL-DAT.1SG
 ‘And get me a document certified with his seal that they have been cleared
 (of claims)’
 (OA; CCT 3, 22b + 23a)

This type of *k*-marked N-complementation (one of the oldest attestations of *k*-complementation in Semitic) is more difficult to explain as originating in causal clauses, which are not introduced by *ša kīma* in OA. Kouwenberg (2017: 821) notes that the presence of REL-*ša* in *ša kīma* “underlines the adnominal status of the complement clause”, and finds it reminiscent of the presence or absence of *ša* in prepositional phrases such as:

- (17) *tupp-am ša āl-em ša kīma anni-āt-em*
 document-ACC REL city-GEN REL **like** DEM-F.PL-GEN
 ‘a document of the City with this content’
 (OA; Kouwenberg 2017: 365)

In this prepositional phrase, *kīma* is a preposition of comparison ('like'),²² and *anniātem* a demonstrative referring anaphorically to the content of a document: ('a document... *which like this*'). As Kouwenberg (2017) notes, there is indeed an apparent resemblance with N-complementation with *ša kīma* (or *kīma*) marking the content of nominals like "document", as in (16). There, this 'content' is expressed with an embedded clause (a fully-fledged predicate with *SUBR* marking), rather than a demonstrative. Considering the similative meaning of preposition *kīma* in (17) and the frequent similative meaning of subordinator *kīma*, it is not unreasonable to think that complementizer *kīma* in N-complements (16) could have also shared this overarching similative semantics: 'a document... (*which*) *be-like* they have been cleared'.

It should be noticed that Akkadian complement-taking nominals are also attested in direct reported discourse constructions of the type '*the message: "bring the troops"*', usually with no introductory markers (see Section 3.3). The similarity between these constructions and N-complements with *k*-markers, such as '*the message kīma he brought the troops*', reinforces the assumption that N-complement clauses refer indeed to the content of locution NPs (i.e., they are not ambiguous with causal interpretations), and that this reference is made more explicit by an equative/similative or perhaps deictic function of *kīma*.

Furthermore, OA embedded complements are not always restricted to having nouns as overt heads. A demonstrative in (18) seems to take this function:

- (18) **anni-āt-em kīma šabu-āku-ni miššum it=tuppī-ka la**
 DEM-F.PL-OBL COMP pay.STAT-1SG-SUBR why in=tablet.GEN-2SG.POSS NEG
talput-am

2SG.TOUCH.PST-VENT

'Why have you not written this (lit. 'these' F.PL), that I have been paid, to me in your tablet?'

(OA; CCT 2, 3:11–3)

These observations on OA nominal complements (and their parallels in other Semitic varieties)²³ suggest a functional and syntactic association between nominal and finite V-complementation, particularly of utterance CTPs:

You have written the message/this *kīma* (complement clause)

You have written *kīma* (complement clause)

²² Other meanings of Akkadian preposition *kīma* are: "in the manner of, as, according to, corresponding to, instead of, in lieu of". (Oppenheim 1971, 367 [CAD dictionary]). Only with infinitives can preposition *kīma* take a temporal sense. No causal meanings are described for this preposition.

²³ Interestingly, Dixon (2006: 11) notes that it is unusual to encounter NP governing complement clauses, but it occurs in languages like Modern Hebrew.

Crosslinguistically, noun-REL derived complementizers that might eventually lose the noun stem have been described in the literature (cf. the ‘noun channel pathway’ in Heine and Kuteva [2007: 230]). An original non-overt anaphoric reference to a certain NP (e.g., ‘message’) or an exophoric reference to some other context could explain the characteristics of one of the main speech-related CTPs in OB: *šapārum* ‘to send; send (a message), write (to)’ Black et al. (2000: 357).²⁴

- (19) *kīma* (...) *šāb-am ana libbi-šu tušerib-u*
 COMP army-ACC to heart-3SG.POSS 2SG.CAUS.enter-SUBR
tašpur-am
 2SG.SEND.PST-1SG.DAT
 ‘You wrote to me (lit. ‘sent me’) that you brought in the troops’.
 (OB; ARM 4, 28: 5–7)

The reference to an overt or non-overt element (like a NP) could be explained by inferring a similative function of *k*-markers, as represented in (20):

- (20) *You sent* – (the message) – BE.LIKE/AS – *you brought in the troops*

N-complementation need not be more original than V-complementation in Akkadian (as per the ‘noun channel pathway’); developments in N- and V-complementation could have affected each other in dynamic ways. Nevertheless, both types of complementation can be directly associated with the frequent equative/similative meanings of subordinator *kīma*. Other models, such as the CAUSE>COMPL hypothesis, can only explain an original reanalysis in utterance V-complements, requiring further steps to explain other V- and N-complementation.

3.2 Polarity and *k*-complementation

The OA and OB record occasionally attest to *kīma* as complementizer in polar indirect questions:

- (21) *kīma kasp-am išû ū lā išû mimma*
 COMP silver-ACC 3SG.HAVE.SUBR or NEG 3SG.HAVE.SUBR something
lā iqbi
 NEG 3SG.SAY.PST
 ‘He did not say anything, whether he had the silver or not’
 (OA; m/k 69: 56–57)

²⁴ This CTP is particularly frequent in the Mari dialectal variety of OB.

Although more research is needed to document polar questions with *k*-complement markers in OA and OB, instances like (23) suggest a relationship between *kīma*-clauses and “anchor” NPs or headless constructions.

3.3 Direct reported discourse

Akkadian complement-taking nouns such as ‘word’ are also attested in direct reported discourse constructions, where a quotation usually appears in apposition to the NP (Kouwenberg 2017: 832):

- (24) *awāt kār-em lā tušerrab-am* [...] *illik*
 word port-GEN NEG 2SG.CAUS.enter.PST-VEN 3SG.GO.PST
 ‘The order from the port: “do not bring (it) in” went out [to...]’
 (OA; CCT 4, 27A)

The origin of *k*-markers introducing N-complements (Section 3.1) could be conjecturally related to a deictic quotative function in line with well-known cases of grammaticalization, where complementizers develop from direct-quote makers (Güldemann 2008; Saxena 1995). On a cross-Semitic perspective we find that, among numerous strategies to render reported discourse, markers introducing quotations are sometimes formally identical to *k*-complementizers. Ge’ez *kama* (Tropper and Hasselbach-Andee 2021), BH *kī* (Zewi 1996: 12) and Old South Arabian *k* (Pat-El 2008: 68) occur both as complementizers and as markers of direct reported discourse. Going back to the second millennium BCE, does Akkadian *kīma* function as quotative?

The answer is that *kīma* is not considered a direct quote marker (cf. Von Soden and Mayer 1995). The Akkadian record not only presents asyndetic quotations, like many other Semitic languages (cf. Pat-El 2012: Ch. 4), but also features an unrelated quotative marker (*umma*) which signals *verbatim* rendering of discourse (cf. Deutscher 2011). Nevertheless, a couple of remarks are in order. First, the boundaries between direct and indirect reported discourse can occasionally be blurry. Kouwenberg (2017: 833–834) notes that in OA the ‘deixis of direct speech’ might be realised by *kīma*-clauses:

- (25) *kīma habul-āku-ni lā taqbi-am-ma*
 COMP to.be.in.debt.STAT-1SG-SUBR NEG 2SG.speak.PST-DAT.1SG-P
 ‘You did not say to me (that) “I am indebted”’
 (OA; Kouwenberg 2017: 833–834)

In (25), the subordinative (*-ni*) formally marks the direct quotation as a syntactically embedded clause introduced by *kīma*, like in indirect-speech constructions. However, the quoted material is not adjusted to mark deictically a 2nd person singular, as would be expected in canonical Akkadian indirect-speech clauses. This observation

aligns with the difficulty of categorizing direct and indirect constructions into completely discrete groups in ancient Semitic languages (Goldenberg 1991), especially when no overt subordinative markers exist or are graphically noted.

Another similarity between direct reported discourse and *k*-markers in Akkadian concerns the functional division between two elements that are etymologically related: the complementizer *kīma* and the manner deictic *ki'am*. The interesting thing about *ki'am* is that, although it is not a quotative marker in itself, it typically accompanies the quotative (*umma*), carrying a deictic cataphoric function. It also performs a correspondent anaphoric function signalling the end of the quotation:

- (26) *kī'am* *iqbi-am* *umma* *šu-ma* *kaparr-u* *ša*
 thus 3SG.say.PST-DAT.1SG QUOT he-P shepherd-PL.NOM REL
qāti-ni *ana rēdi* *umtallū* *kī'am* *iqbi-am*
 hand-1PL.POSS to soldier.GEN.PL 3PL.assign.PASS.SUBR thus he.say.PST-me
 ‘Thus [*kī'am*] he told me: [QUOT] “shepherds in our service were hired as soldiers”. Thus [*kī'am*] he spoke to me.’
 (OB; AbB 2, 3: 5–8)

Akkadian, therefore, seems to have lexicalized a distinct deictic adverb (*ki'am*) and a complementizer (*kīma*) from a common *k*-morph. The first one has an evident manner meaning (‘like this, thus’) and is frequently used in direct reported discourse constructions; the latter, in turn, marks indirect reported discourse, in what could be considered a non-deictic complementary function to the former.

In sum, whilst the synchronic observations on documented Akkadian do not evidence a QUOT>COMPL grammaticalization path, the functional parallelism between *ki'am* and *kīma* with respect to reported discourse suggest that *kīma* could have shared a core manner element with the deictic adverb *ki'am*, which aligns with other observations that relate complementizer *kīma* with similitive constructions. It remains to be substantiated whether a QUOT>COMPL development could be invoked for pre-documented Akkadian and for other Semitic languages (with no lexical distinction between deictic and non-deictic *k*-markers), or whether quotative and complementizer functions could independently derive from a common source.

3.4 Complementation of frequent CTPs

So far, observations on the connection that both N-complementation and similitive markers might have with Akkadian *k*-complementation have been mainly associated with utterance CTPs and notionally related nominals (like ‘word’). However, the most frequent CTPs found in the OB corpus (Figure 2 and Table 2) belong to the semantic category of knowledge and, to a lesser extent, ‘proving’ verbs.

A hypothesis linking the emergence of V-complementation specific to ‘proving’ verbs and manner expressions was mentioned in Section 2.2. Deutscher (2000: 54) explains: “The development of finite complements with the proving verbs proceeded from the comparative meaning of the conjunction *kīma* (rather than the causal meaning) and involved the merger of two different nominal arguments into one complement clause”. Unlike the CAUSE>COMPL hypothesis concerning the rest of the Akkadian CTP spectrum, the development of finite complementation with ‘proving’ verbs is crucially based on the identification of *kīma* as an original “equating particle” (Deutscher 2000: 173):

- (27) *kīma waras-su ukān-šu-ma*
kīma slave-his he.proves-him-P
 ‘he proves him as his slave’
 (OB; Deutscher 2000: 173. [Glossing and translation as in source])

According to Deutscher (2000: 55), the diachronic development of these complement clauses can be modelled on (synchronically attested) OB constructions:

- (28) (i) Noun phrase: *kīma* a slave I prove-him
I prove him as a slave’
 (ii) Verbless clause: *kīma* he a slave I prove-him
I prove him that he (is) a slave’
 (iii) Verbal clause: *kīma* he ran away I prove-him
I prove him that he ran away’
 (iv) True complement: *kīma* he ran away I prove-Ø
I prove that he ran away’

Streck (2002: 141) notices that (27) cannot illustrate stage (28 i) – as suggested by Deutscher (2000) – because *kīma* is not a true preposition there (the following nominal lacks genitive marking). However, it can serve as an example of stage (ii) (verbless clauses), even though the subject of the embedded clause is only overtly expressed outside the *kīma*-clause. The matrix clause has then an overt nominal object (the ‘proved person’) which is also an argument of a *kīma*-clause (‘[he] (is) a slave’). In the third stage of Deutscher’s (2000) model, one participant occurs redundantly as object of the main clause and as subject of the embedded dependent clause:

- (29) *kīma mimmu-šu lā halq-u bābta-šu [...]*
 COMP property.NOM-3SG.POSS NEG 3SG.lose.STAT-SUBR district-3SG.POSS
ubār-šu-ma
 3SG.PROVE.PRS-3SG.ACC-P
 ‘his district will prove him [...] that his property is not lost’
 (OB; Code of Hammurabi §126)

Finally, stage (iv) shows no object NP in the main clause and only the complement clause fills the object argument slot.

What about knowledge verbs? As mentioned before, ‘know’ is the most frequent CTP in Akkadian and recurrent in other Semitic records. Two diachronic scenarios will be outlined based on circumstantial evidence from Akkadian and complemented with observations from other ancient Semitic descriptions. On the one hand, finite V-complements of knowledge verbs could derive from similitive clauses with an overt or non-overt NP referent: ‘to know (*the matter*) BE.LIKE/AS + clause’. This is equivalent to processes suggested in Sections 3.1 and 3.2 for utterance CTPs and polar indirect questions. This scenario could help explain the frequency of knowledge *kīma*-complement constructions in rhetorical questions – with presupposed information – and to be avoided in constructions that introduce new information. Incidentally, the same tendency for rhetorical and presupposed settings applies to BH *kī*-complements (Givón 1991: 274).

The second diachronic inference is based on the functional and structural similarity between ‘proving’ verb constructions and certain types of *kīma*-complements with knowledge verbs. Notice, for example, the use of ‘know’ in an OB legal document (30–32). It records how some witnesses declare whether they “know” that X is the biological offspring of Y:

Witness 1 utters a verbless clause:

- (30) X *lū rihût* Y
 X _{EMPH} progeny Y
 ‘X is indeed the offspring of Y’

Witness 4 states the same, with a *kīma*-clause complement:

- (31) *kīma* X *rihût* Y *īde*
 COMP X progeny Y 1SG.know
 ‘I know that X is the offspring of Y’

Finally, witness 2, 3, 7 and 8 repeat the same statements with *kīma*-clauses after the first name:

- (32) X *kīma rihût* Y *nīde*
 X COMP progeny Y 1PL.know
 ‘We know X that is the offspring of Y’
 (OB; Adapted from Roth 2001: 269)

The different constructions (30–32) resemble the verbless stages of ‘proving’ verbs formulated in (28). Importantly, the OB corpus analyzed shows that a non-negligible 23 % of all the instances of *kīma*-complements with ‘know’ occur in similar verbless clauses (15/61). These also include 4 cases where the subject of the *kīma*-clause is placed before the complementizer (as in [32]), a feature shared by 2 of the 5 instances of *kīma*-complements with ‘prove’ in the corpus. It should also be stressed here, that the semantics and the pragmatical context of instances of complementation like (32) are far removed from potential causal or ‘how-QUESTION’ meanings of *kīma*.

Deutscher (2000 and 2006) acknowledges some similarity between OB knowledge and ‘proving’ constructions, particularly in the way the subject of the complement clause is found outside the clause. However, he assumes a fundamental difference: “the subject of the complement clause [for knowledge verbs] does not appear in the accusative case, as the object of the main verb, but rather in the nominative” (Deutscher 2000: 58 note 21). Nevertheless, Deutscher (2000) does not present examples of accusative marked subjects of complement clauses for ‘proving’ verbs either.²⁶ In principle, the cases recorded could simply be considered as belonging to the later stages of the model in (28), where a hypothetical ACC>NOM process is already accomplished. But the pace of the assumed change could also be significantly affected by the type of predicate of the embedded clause: a transitive one would immediately be under pressure to distinguish its core A and O arguments by means of case marking.

Some isolated examples in Akkadian might nonetheless illustrate the accusative marking of heads of the dependent clauses. One ‘early’ OB text in the corpus analyzed presents a verbless clause without complementizer²⁷ where the participant is indeed in accusative:

- (33) *šēn-a-šu annakiam eli-šu atta ula tīde*
 flock-ACC-3SG.POSS here on-him you NEG 2SG.know
 ‘Don’t you yourself know (that) his flocks here (are debited) to him?’
 (OB; George 2018: 67)

In an OA literary text, a genre prone to bear archaisms (Westenholz 1997), we find an unusual complement construction with two related object arguments: a pronominal object of the predicate ‘know’ – marked indeed in accusative – and a complex complement clause which predicates about it.²⁸

- (34) *Anum lā īde-anni kīma šarr-um anāku-ni*
 Anum NEG 3SG.know-1SG.ACC COMP king-NOM I-SUBR
māt-am elīt-am u šaplīt-am ašbut-uni
 land-ACC upper-ACC and lower-ACC 1SG.seize.PST-SUBR
 ‘Does Anum not know me, that I am the king (and) I seized the upper and the lower land?’
 (OA; Archivum Anatolicum 3, 152f [“OA Sargon legend”])

²⁶ Example (27) is used by Deutscher (2000) to illustrate a pre-clausal ‘noun phrase’ stage (28i).

²⁷ Complement clauses without complementizer are occasionally attested in OB. Cf. text AbB 1, 89 for parallel examples with and without *kīma*.

²⁸ For a similar OA construction see text Kt 87/k 249a, translated by Michel (2001: 158) as: “*tu me connais, comme quoi je suis (...) pour toi!*”.

Are these Akkadian instances simply rare proleptic by-forms, or could they be vestiges of syntactic structures revealing one source of V-complementation?

Deutscher's (2000) analysis of 'proving' CTPs proposes a link between object NPs and complement clauses through an 'equating' function of the *k*-marker. A broad similitive meaning of *kīma* in the examples above, in the sense of 'knowing' or 'considering' a NP "as" (+ a clause) is semantically plausible. It also correlates with the core comparative meaning of preposition *kīma* and one of its main functions as subordinator (cf. Figure 1). Moreover, this role of *kīma* in 'proving' and knowledge predicates is clearly reminiscent of its function in N-complementation, as discussed in Section 3.1. The outline for the complementation of 'locution' nominals (20) could then be extrapolated to 'proving' and knowledge CTP's constructions (35).

(20) *You sent* – (the message) – BE.LIKE/AS – *you brought in the troops*

(35) *know, see, consider* – NP – BE.LIKE/AS – (verbless) COMPLEMENT

This model suggests two processes whereby a similitive *k*-morph eventually loses its manner nuances to grammaticalize into a complementizer.

Let us consider other Semitic languages. In his study of BH, Givón (1991 and 2015) formulates two possible pathways to complementation, apart from the 'because-factive blend' mentioned earlier. One of them, the 'accusative-propositional blend' is specific for perception and knowledge CTPs, and assumes a three-stepped analogical change:

- (36) (i) First syntactic intermediate: *He saw* ACC-*the woman* SUB-*she was there*
 (ii) Second syntactic intermediate: *He saw* ACC-SUB *she was there*
 (iii) Final simplification: *He saw* SUB *she was there*
 (Givón 1991: 291)

This process is devised for Late BH complementizer and REL-marker 'asher/she, which develops 'true' V-complement clauses in steps (ii) and (iii). This is, therefore, seen as a process from REL-clause morphology to V-complementation, where the REL-clause is "reanalyzed as the actual object of the main predicate triggering the transformation of the relative pronoun [...] into a complementizer, and the elimination of the direct-object nominal complement" (Cristofaro 1988: 65). The syntactic development resembles the one hypothesized for *k*-complementation in Akkadian 'proving' CTPs. Crucially, in BH the REL-marker 'asher/she is not involved in the first step of the process (36 i): this step "is attested in the earliest stages of E[arly] BH, and there only with the subordinator *ki* or *ve-hineh*" (Givón 1991: 291 [emphasis added]). A "syntactic blend of a nominal direct object and clausal complement" (Givón 2015: 260) is subsequently exemplified in (37):

- (37) *va-yar'* *'elohim 'et -ha-'or ki tov*
 and-3SM-see/PFV God ACC-the-light SUB good
 'and God saw the light (and) that it was good...'
 (BH; Givón 2015: 260, from Gen. 1.4 [glosses and translation as in source])

There are two main differences between Givón's (1991 and 2015) assumptions for BH and the potential development of Akkadian V-complementation discussed earlier. Firstly, Givón (1991 and 2015) does not consider the BH *k*-marker to derive from a manner/comparative source (but from a locative preposition). Secondly, a paratactic stage (36 ii) is assumed for BH, where a perception or knowledge CTP receives a second argument (the complement clause) as an 'afterthought' (Cristofaro 1998: 64; Givón 1991: 288):

- (38) *He saw the light.*
 Afterthought: *He saw that it was good*
 → *He saw the light, that it was good.*
 (from Deutscher 2000: 60)

Deutscher (2000: Ch. 4.4.1) convincingly argues against a similar paratactic 'afterthought' explanation for the development of the Akkadian V-complementation of 'prove' and against traditional interpretations of similar constructions as secondary proleptic processes. Whether the same arguments could apply to BH is a question that awaits further research, but we can conclude that Akkadian and BH present equivalent examples of two-argument complement constructions (with a NP in accusative and a complement clause) marked by *k*-elements, that are only attested in their earlier documentation. The parallelism is also reinforced by the fact that the Akkadian REL-marker *ša* also competes occasionally with *kīma* as a complementizer in OA and OB.

At a considerable spatio-temporal distance from Akkadian and BH, Ge'ez (Ethiosemitic) shows further affinities. Dillmann and Bezold (2005) note:

When, – after verbs which may govern a double accusative, such as verbs of recognizing, declaring, making etc. – the second object is expressed by a clause of its own with a relative conjunction, it is then more elegant to put the first object in the principal clause as the object of that clause, instead of bringing it into the dependent clause as subject of the same [...] or, if that object is indeed attracted into the dependent clause as its subject, it must at least be placed before the conjunctions. Dillmann and Bezold (2005 [1907]: 542)

The 'relative conjunction' to which Dillmann and Bezold (2005 [1907]) refer is the *k*-complementizer *kama*. Tropper and Hasselbach-Andee (2021: 318) also observe that the subject of complement clauses "is often taken up in the main clause in the form of a direct object":

- (39) *rə'ya noḥ mədr-a kama 'adnana-t*
 3SG.see.PST Noah land.F-ACC COMP bend.CAUS.-PF.3SG.F
 'Noah saw the earth, that it had tilted'
 (Ge'ez; Tropper and Hasselbach-Andee 2021: 318; En 65: 1)

Kama is the main complementizer in Ge'ez (Leslau 1987; Tropper and Hasselbach-Andee 2021) and, unlike BH *ki*, is not replaced by REL-markers. If an 'accusative-propositional' analogical change like the one proposed for BH (36) was considered for Ge'ez V-complementation, the marker involved in all steps of the development would be the *k*-marker, rather than the relativizer. Such process would be identical to the one hypothesized for the development of V-complementation of Akkadian 'prove' and knowledge CTPs. Moreover, a similitive/equative meaning of *kama* as source of the complementizer would cohere with the synchronic characteristics of this element. Lambdin (1978: 409) lists its prepositional use as 'like', 'as', 'according to' and 'in accordance with'; and as conjunction: 'that', 'so that', 'in order that', 'as', 'according to' and 'as soon as'. It is not attested as causal ADV-marker.

The syntactic uniformity of Akkadian (34), BH (37) and Ge'ez (39) suggest that a common similitive/equative meaning, rather than temporal or causal, could also be considered as the source for BH *ki* in Givón's (1991 and 2015) account of the evolution of Hebrew complementation.

4 Conclusions

This study set out to determine whether an analysis of the oldest (sufficiently documented) Semitic record can provide relevant information about the development of one type of finite complementation seemingly common to several past and present Semitic languages.

The first conclusion, already hinted in Streck (2002) and mentioned in Hernáiz (forthcoming), is that the emergence of sentential *k*-complementation occurred at an earlier date than previously assumed. New evidence from the extant OAk record shows this type of V-complementation in the III millennium BCE, confirming that its emergence cannot be dated to the subsequent OB period. The limitations of the OAk record preclude any firm conclusions about its frequency or distribution characteristics in this early period, relative to later Semitic documentation. Since none of the available records can conclusively document the genesis of sentential complementation in Semitic, we can only make inferences about it by analyzing corpora in which *k*-complementation already exists. This study has focused on grammatical descriptions and corpora representative of the oldest Semitic doculects: OAk, OB

and OA. The analyses of the distribution, frequency and characteristics of complementation in these Akkadian doculects do not support the hypothesized emergence of *k*-complementation through a reanalysis of causal ADV-clauses.²⁹ By contrast, there are different indications suggesting that manner expressions could more plausibly be at the origin of *k*-complementation, in particular, simulative/equative constructions. These observations are based exclusively on written data which, despite their antiquity, might be still distant from the point(s) of emergence of Semitic finite V-complementation. However, a SIMIL>COMPL model fits better with the widespread comparative meaning of *k*-adpositions (cf. Brockelmann 1908: 496) and *k*-subordinators across Semitic, and is more parsimonious than alternative reanalyses from causal or interrogative elements, which would require more steps to account for the complementation of nominals, polar questions and frequent CTPs described in Section 3.

A SIMIL>COMPL grammaticalization has been proposed for many languages (Güldemann 2008; Kuteva et al. 2019; Lord 1993). According to Kuteva et al. (2019: 399), the exact nature of this pathway is not entirely clear, but it seems that “the process typically leads from the simulative via quotative to complementizer uses”. The Akkadian data analysed here does not directly attest to such quotative phase, but a deictic use of *k*-markers to introduce speech-like content is not ruled out.

The role of nominals and nominal complementation was described in Section 3. The early attestation of *k*-complement clauses predicating the content of ‘locution’ nominals point to the possibility that similar constructions with a non-overt exophoric or endophoric referent could relate to certain types of V-complementation, especially with utterance CTPs. The use of *k*-complementizers in some polar question complement constructions could have a similar explanation. Moreover, the early constructions where the CTP of a matrix clause entails both a nominal object and a clause introduced by a *k*-marker could also be considered a clue to explain the development of sentential *k*-complementation. In its ground-breaking study of syntactic change in Akkadian, Deutscher (2000) proposes a scenario in which complement clauses of ‘proving’ CTPs developed from the syntactic fusion of a NP argument and a clause. The OB and OA data suggest that this model could also be extended to Akkadian knowledge verbs.

The role of nominals in the two scenarios described is not the same. The first one assumes a nominal that can be more generic and eventually not expressed overtly; in the second one, the nominal is hypothesized to become integrated into the clause, which then becomes the only object argument. The two models are not mutually exclusive; they apply to different types of semantic contexts. But in both of them, the

²⁹ For a crosslinguistic assessment of evidence for the CAUSE>COMPL path, see Hernáiz (forthcoming).

nominal is equated with the information provided by the *k*-clause, and the *k*-marker grammaticalizes into a complementizer.

The inferences drawn from the early Akkadian corpora can be replicated with data from other Semitic languages. A similitive/equative source (LIKE/AS) for *k*-complementizers in BH and Ge'ez constructions (37; 39) – and their resonance in modern languages (40) – can be now considered in the light of the Akkadian data.

- (37) *va-yar' 'elohim 'et -ha-'or ki tov*
 and-3SM-see/PFV God ACC-the-light SUB good
 'and God saw the light (and) that it was good...'
 (BH; Givón 2015: 260, from Gen. 1.4 [glosses and translation as per source])

- (39) *rə'ya noḥ mādr-a kama 'adnana-t*
 3SG.see.PST Noah land.F-ACC COMP bend.CAUS.-PF.3SG.F
 'Noah saw the earth, that it had tilted'
 (Ge'ez; Tropper and Hasselbach-Andee 2021: 318; En 65: 1)

- (40) *And God saw the light, that it was good* (Gen 1:4, King James version).

The resemblance between early Akkadian and Ge'ez with regards to complementation and *k*-markers is considerable, given their chronological distance and the fact that the main documented languages that expanded in the spatiotemporal gap between both (Imperial Aramaic and Arabic) do not attest to this type of *k*-complementation. The previously assumed emergence of *k*-complementation in OB implied that it could not have existed in "Proto-Semitic", and that "parallel developments of *kī/kīma* as a complementizer took place in the different [Semitic] languages" (Deutscher 2000: 63). The observations presented in this study cannot establish whether parallel developments are to be held responsible for the presence of *k*-complementation across Semitic. However, the argued impossibility of a shared retention from earlier Semitic stages can no longer be based solely on the argument that it only emerged in a well-documented historical OB locus.³⁰

The complementation strategies in some Ethiosemitic languages like Tigre, Tigrinya, and their older relative Ge'ez, are not only comparable to neighboring languages of the Ethiopian Linguistic Area, notable for frequent examples of grammaticalization of similitive morphemes into complementizers (Treis 2020). Their way of marking V-complements using morphemes that also serve as markers of similitive, temporal, accord, purpose and simulative clauses is also mirrored in Akkadian *k*-markers, at the far end of the Semitic branching spectrum.

³⁰ Notice that while Pat-El (2020) assumes parallel developments for adverbial subordination in Semitic based on the lack of shared cognate subordinators, this does not affect *k*-makers, the only subordinators in her data that occur across Semitic.

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Abbreviations

AbB	Altbabylonische Briefe in Umschrift und Übersetzung
AS	Assyriological Studies
AUWE	Ausgrabungen in Uruk-Warka Endberichte
CUSAS	Cornell University Studies in Assyriology and Sumerology
OBTIV	Old Babylonian Tablets from Ishchali and Vicinity
RA	Revue d'Assyriologie et d'Archéologie Orientale
TIM	Texts in the Iraq Museum
UET	Ur Excavations Texts
YOS	Yale Oriental Series

Appendix

I) Corpora of Akkadian mentioned in the study:

- Old Akkadian corpus (as in Deutscher 2000: xv): Collection of 111 letters from Kienast and Volk (1995), 2 letters from Foster (1990) and the royal inscriptions from Gelb and Kienast (1990).
- Old Babylonian corpus: Collection of the 1,800 texts from the Annotated Corpus of Correspondence in Old Babylonian (Hernáiz 2020), plus letters 1–220 in George (2018).
- Old Assyrian corpus: Collection of 362 non-annotated letters. They are those published in Michel (2001), with the exception of: Akkadica 18, 31; Babyl. 6, 7; HUCA 39, 12–13; 19; 22–23; 26; 30a; 30b; HUCA 40, 47–48; 55; 57b; 59–60; 69; 70a; JJP 11/12, 117; Kt c/k 1055; 1062; Kt 92/k 200; LB 1201; Nesr. Bog. 2; Prague I 480, 590, 593; RA 51, 6; RA 58, 113; 131; RA 60, 109; 120; RT 31, 55; TPAK 1, 43a; 43b; 44a; 44b; 50; 56; TTC 14; 17; 19; 26; 27.

II) Instances of CTPs with *k*-complement clauses in the OB corpus analyzed (Figure 2). The data is available in electronic format at <https://doi.org/10.5281/zenodo.8202071>.

Complement-taking predicate	Text
SEE (<i>amārum</i>)	AbB 14, 30: 26
SEE (<i>amārum</i>)	AbB 3, 21: 28
SEE (<i>amārum</i>)	AbB 3, 52: 32
SEE (<i>amārum</i>)	AbB 5, 171: 23

(continued)

Complement-taking predicate	Text
SEE (<i>amārum</i>)	AbB 7, 153: 52
SEE (<i>amārum</i>)	mel. Garelli pp. 147–159, iii: 30
SEE (<i>amārum</i>)	AbB 14, 110: 26
PROVE (<i>burrum</i>)	AbB 11, 189: 26
PROVE (<i>burrum</i>)	AbB 14, 34: 6
PROVE (<i>burrum</i>)	AbB 2, 43: 17
PROVE (<i>burrum</i>)	AbB 4, 15: 16
PROVE (<i>burrum</i>)	AbB 4, 40: 13
KNOW (<i>edûm</i>)	AbB 3, 72: 7
KNOW (<i>edûm</i>)	AbB 10, 101: 7
KNOW (<i>edûm</i>)	AbB 10, 18: 9
KNOW (<i>edûm</i>)	AbB 10, 2: 11
KNOW (<i>edûm</i>)	AbB 11, 136: 8
KNOW (<i>edûm</i>)	AbB 11, 154: 5
KNOW (<i>edûm</i>)	AbB 11, 17: 20
KNOW (<i>edûm</i>)	AbB 11, 182: 9
KNOW (<i>edûm</i>)	AbB 14, 107: 9
KNOW (<i>edûm</i>)	AbB 14, 111: 49
KNOW (<i>edûm</i>)	AbB 14, 138: 8
KNOW (<i>edûm</i>)	AbB 14, 62: 7
KNOW (<i>edûm</i>)	AbB 14, 67: 13
KNOW (<i>edûm</i>)	AbB 3, 11: 26
KNOW (<i>edûm</i>)	AbB 3, 20: 9
KNOW (<i>edûm</i>)	AbB 3, 33: 17
KNOW (<i>edûm</i>)	AbB 3, 63: 7
KNOW (<i>edûm</i>)	AbB 4, 122: 15
KNOW (<i>edûm</i>)	AbB 4, 131: 12
KNOW (<i>edûm</i>)	AbB 4, 139: 28
KNOW (<i>edûm</i>)	AbB 4, 183: 21'
KNOW (<i>edûm</i>)	AbB 4, 53: 17
KNOW (<i>edûm</i>)	AbB 4, 53: 8
KNOW (<i>edûm</i>)	AbB 4, 55: 8
KNOW (<i>edûm</i>)	AbB 4, 56: 20
KNOW (<i>edûm</i>)	AbB 4, 69: 31
KNOW (<i>edûm</i>)	AbB 5, 173: 8
KNOW (<i>edûm</i>)	AbB 5, 25: 5
KNOW (<i>edûm</i>)	AbB 6, 103: 7
KNOW (<i>edûm</i>)	AbB 9, 198: 6
KNOW (<i>edûm</i>)	AbB 9, 209: 6
KNOW (<i>edûm</i>)	AbB 9, 48: 15
KNOW (<i>edûm</i>)	AS 22, 40: 5'
KNOW (<i>edûm</i>)	AUWE 23, 76: 19
KNOW (<i>edûm</i>)	CUSAS 36, 126: 8

(continued)

Complement-taking predicate	Text
KNOW (<i>edûm</i>)	CUSAS 36, 142: 9
KNOW (<i>edûm</i>)	CUSAS 36, 175: 26
KNOW (<i>edûm</i>)	CUSAS 36, 176: 15
KNOW (<i>edûm</i>)	CUSAS 36, 176: 9
KNOW (<i>edûm</i>)	CUSAS 36, 181: 15
KNOW (<i>edûm</i>)	CUSAS 36, 196: 8
KNOW (<i>edûm</i>)	CUSAS 36, 199: 7
KNOW (<i>edûm</i>)	CUSAS 36, 39: 17
KNOW (<i>edûm</i>)	CUSAS 36, 54: 8
KNOW (<i>edûm</i>)	CUSAS 36, 75: 6
KNOW (<i>edûm</i>)	CUSAS 36, 83: 15
KNOW (<i>edûm</i>)	CUSAS 36, 95: 16
KNOW (<i>edûm</i>)	CUSAS 36, 99: 9
KNOW (<i>edûm</i>)	Edubba 7, 81: 20
KNOW (<i>edûm</i>)	OBTIV 24: 24
KNOW (<i>edûm</i>)	RA 102, 11: 7
KNOW (<i>edûm</i>)	RA 102, 5: 24
KNOW (<i>edûm</i>)	RA 53, D 18: 12
KNOW (<i>edûm</i>)	RA 95, 2002/1: 9
KNOW (<i>edûm</i>)	Semitica 58, 3: 18
KNOW (<i>edûm</i>)	TIM 1, 20: 42
KNOW (<i>edûm</i>)	TIM 1, 20: 72
KNOW (<i>edûm</i>)	UET 5, 23: 14
KNOW (<i>edûm</i>)	UET 5, 42: 10
KNOW (<i>edûm</i>)	UET 5, 57: 6
KNOW (<i>edûm</i>)	YOS 15, 23: 9
LEARN (<i>lamādum</i>)	CUSAS 36, 86: 36
LEARN (<i>lamādum</i>)	RA 53, D 16: 14
LEARN (<i>lamādum</i>)	UET 5, 81: 48
SPEAK (<i>qabûm</i>)	AbB 11, 158: 22
SPEAK (<i>qabûm</i>)	AbB 11, 38: 10
SPEAK (<i>qabûm</i>)	AbB 12, 172: 12
SPEAK (<i>qabûm</i>)	AbB 13, 33: 28
SPEAK (<i>qabûm</i>)	AbB 14, 112: 14
SPEAK (<i>qabûm</i>)	AbB 14, 26: 6
SPEAK (<i>qabûm</i>)	AbB 2, 62: 11
SPEAK (<i>qabûm</i>)	AbB 2, 64: 7
SPEAK (<i>qabûm</i>)	AbB 2, 75: 7
SPEAK (<i>qabûm</i>)	AbB 3, 2: 45
SPEAK (<i>qabûm</i>)	AbB 7, 47: 13
SPEAK (<i>qabûm</i>)	AbB 9, 184: 24
SPEAK (<i>qabûm</i>)	AbB 9, 266: 16
SPEAK (<i>qabûm</i>)	OBTIV 23: 20

(continued)

Complement-taking predicate	Text
SPEAK (<i>qabûm</i>)	AbB 5, 10: 10
SPEAK (<i>qabûm</i>)	AbB 13, 4: 6'
SPEAK (<i>qabûm</i>)	AbB 9, 252: 18
SPEAK (<i>qabûm</i>)	AbB 5, 195: 8
SPEAK (<i>qabûm</i>)	AbB 14, 111: 57
HEAR (<i>šemûm</i>)	AbB 12, 60: 26
HEAR (<i>šemûm</i>)	mel. Garelli pp. 147–159, iv: 23
HEAR (<i>šemûm</i>)	Sumer 14, 39: 4
HEAR (<i>šemûm</i>)	AbB 12, 172: 14

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