

Roles and Relations in Biblical Law: A Study of Participant Tracking, Semantic Roles, and Social Networks in Leviticus 17-26

CHRISTIAN CANU HØJGAARD



UNIVERSITY OF
CAMBRIDGE

Faculty of Asian and Middle
Eastern Studies



<https://www.openbookpublishers.com>

©2024 Christian Canu Højgaard



This work is licensed under an Attribution-NonCommercial 4.0 International (CC BY-NC 4.0). This license allows you to share, copy, distribute, and transmit the text; to adapt the text for non-commercial purposes of the text providing attribution is made to the authors (but not in any way that suggests that they endorse you or your use of the work). Attribution should include the following information:

Christian Canu Højgaard, *Roles and Relations in Biblical Law: A Study of Participant Tracking, Semantic Roles, and Social Networks in Leviticus 17-26*. Cambridge, UK: Open Book Publishers, 2024, <https://doi.org/10.11647/OBP.0376>

Further details about CC BY-NC licenses are available at <http://creativecommons.org/licenses/by-nc/4.0/>

All external links were active at the time of publication unless otherwise stated and have been archived via the Internet Archive Wayback Machine at <https://archive.org/web>

Any digital material and resources associated with this volume will be available at <https://doi.org/10.11647/OBP.0376#resources>

Semitic Languages and Cultures 25

ISSN (print): 2632-6906

ISSN (digital): 2632-6914

ISBN Paperback: 978-1-80511-149-8

ISBN Hardback: 978-1-80511-150-4

ISBN Digital (PDF): 978-1-80511-151-1

DOI: 10.11647/OBP.0376

Cover image: A fragment of a Hebrew Bible manuscript (Leviticus 18.15-19.3) from the Cairo Genizah (Cambridge University Library, T-S A3.30). Courtesy of the Syndics of Cambridge University Library.

Cover design: Jeevanjot Kaur Nagpal

The main fonts used in this volume are Charis SIL, SBL Hebrew, and SBL Greek.

5. DYNAMICITY: A COLLOSTRUCTIONAL APPROACH

1.0. Introduction

Dynamicity refers to the universal opposition between situations of movement, activity, and change on the one hand, and situations of stativity and permanence on the other. Cognitive linguists generally consider the opposition between states and activities the most fundamental opposition with respect to verbal aspect (e.g., Dahl 1985, 28). Leonard Talmy (2000, 414), in his theory of force dynamics, treats the opposition between rest and motion as a language universal. In RRG, as explained in the preceding chapter, all *Aktionsart* classes are derived from the stative-dynamic opposition. For instance, a semelfactive verb is not simply a state or activity; rather, the semelfactive aspect is in fact projected as an operator modifying a state or activity, as exemplified in Van Valin (2005, 47):

(1) Dana glimpsed the picture.

SEML **see'** (Dana, picture)

(2) Mary coughed.

SEML **do'** (Mary, [**cough'** (Mary)])

Semitic languages, including Biblical Hebrew, support this notion of a fundamental opposition between states and activities. The verbal stem *qal* is attested in six vowel patterns, two of which are generally used for activities, another two for states, while the remaining two vowel patterns mix states and activities (Waltke and

O'Connor 1990, §22.3b). As discussed below, however, the correlation between morphology and *Aktionsart* is not so consistent as might be expected from the vowel patterns.

2.0. Previous Research on Dynamicity in Biblical Hebrew

As an ancient language, Biblical Hebrew is semantically much less accessible for contemporary research than modern languages. Stuart A. Creason (1995, 23–25) rightly notes the limitations for modern investigations of BH. Firstly, the corpus is limited, and since the corpus is ancient, the corpus cannot be expanded with additional evidence (unless archaeology uncovers related texts). Neither can one consult native speakers of BH. Secondly, due to the limited size of the corpus, many verbs are only attested a few times. And one may add that even relatively frequent verbs may not occur frequently with any particular adverbial modifier, so contextual evidence is sometimes scarce. Thirdly, the corpus contains a variety of literary genres (including prose, poetry, and prophetic literature) and is made up of texts from a range of historical periods.¹ Therefore, a verb may

¹ The question as to whether the Hebrew Bible contains evidence of well-defined stages of ancient Hebrew remains heavily debated. Recently, Hendel and Joosten (2018) have argued for three such stages of BH—namely, classic (CBH), transitional (TBH), and late Biblical Hebrew (LBH)—based on morphological and syntactic variations as well as synchronisations with extra-Biblical inscriptions. While CBH is most commonly associated with the Pentateuch and the Deuteronomic history (Joshua–Kings), other portions of the Bible are sometimes included: Isa. 1–39; Hosea; Amos; Obadiah; Micah; Nahum; Habakkuk;

be used differently in different parts of the HB.² Semantic decomposition of Biblical Hebrew verbs is thus a tricky endeavour, and

Zephaniah; and various Psalms (Hornkohl 2013). In this study, CBH is limited to Genesis–Kings. LBH includes Esther; Daniel; Ezra–Nehemiah; Chronicles; Ecclesiastes; the narrative framework of Job; and various Psalms. TBH is somewhat more debated, but it has been suggested that it contains the latter part of Kings; Jeremiah; Isa. 40–66; Ezekiel; Haggai; Zechariah; Malachi; and Lamentations (Hornkohl 2013). It has been objected that the syntactic variations between so-called CBH and LBH point rather to the coexistence of literary styles throughout the Biblical period (e.g., Young et al. 2008). For a recent overview of the *status quaestionis* and an extensive bibliography of the vast number of contributions published on this topic in recent years, see Rezetko and Young (2019).

² It has been common among Biblical scholars to posit a clear distinction between the usage of verbs in prose and poetry. In contrast to prose, poetic language was often considered “transcendent” and beyond “human understanding and analysis” (Van Peursen 2017, 378). According to Van Peursen, however, a number of recent studies on Biblical poetry in fact demonstrate the linguistic regularities of this genre, including Glanz’s (2013) investigation of participant-reference shifts in Jeremiah (see chapter 3, §3.6), Oosting’s (2013) analysis of the roles of ‘Zion’ and ‘Jerusalem’ in Isa. 40–55, Kalkman’s (2015) study of verbal tenses in the Psalms, Bosman’s (2019) dissertation on the relationship between syntactic and prosodic structure in BH poetry, and Erwich’s (2020) analysis of participant-reference shifts in the Psalms (see chapter 3, §2.1). Moreover, it has been argued that the difference between these genres with respect to verbs is not one of grammar but “style” (Joosten 2012, 416) or “poetics” (Rogland 2003, 13 n. 70). One major difference between prose and poetry is the often “segmental nature” of the latter, which allows the author to shift perspective and theme (Siegismund 2018, 95). Furthermore, as Siegismund (2018, 94–97) explains, poetry

the following remark and question from Creason (1995, 22) capture the challenge—and sometimes frustration—that Hebraists face in their quest for meaning in Biblical Hebrew:

The kinds of semantic distinctions which are discussed in this study are often subtle ones and this is especially true of the distinctions exhibited by verbs that are ambiguous in meaning. On what basis can one be at all certain that a particular verb does or does not exhibit the kind of semantic distinctions that are the focus of this study?

The traditional Downtonian approach is obviously difficult to apply to Biblical Hebrew. As noted in chapter 4, David R. Dowty's approach depends inherently on a principle of falsification by intuition, and we do not have such an intuition for Biblical Hebrew. There are no native language users to falsify our hypothetical juxtapositions of verbs and certain adverbials or our paraphrases of Hebrew sentences. One may wonder whether rare constructions are 'odd' (see Jero 2008, 56), but it is impossible to falsify this claim.

Previous research has (rightly) focused on how internal aspect relates to the morphology and syntax of Biblical Hebrew. If we are to decompose Biblical verbs in a consistent way, we need textual evidence—either the morphology of the verb, adverbial modifiers in the clause, or evidence from the discourse. In fact, for comprehensive analyses of the realisation of internal aspect, these parameters have often been combined. For the sake of

is more prone to textual corruption, due to the high degree of ambiguity often found in this genre, which also explains why it is often possible to posit alternative readings of the Hebrew verbs.

providing an overview of the research, however, I will focus on morphology and syntax separately.

2.1. Morphology

States and activities have traditionally been distinguished on the basis of vowel patterns (Waltke and O'Connor 1990, §22). Activities have an *a* theme vowel in the *qātal* and an *ō* theme vowel in the *yīqtōl*.³ For stative verbs, the vowel pattern of the *qātal* is changed to *qātel* or, rarely, *qātōl*, whereas the vowel pattern of *yīqtōl* is changed to *yīqtal*. Although the morphological distinction seems to reveal a fundamental semantic distinction, the correlation between morphology and function is not straightforward. As John A. Cook (2002, 201) explains, the diagnostic theme vowel may be obscured by phonological factors, that is, the original theme vowel may be changed due to a pharyngeal or laryngeal in the second or third position in the verbal root. More importantly, the morphological 'stative' class does not always correlate with what we would assume to be semantically stative verbs. For example, the verbs יָשַׁב 'sit' and עָמַד 'stand' are morphologically dynamic but semantically stative (Jero 2008, 57–58). Therefore, while the morphological patterns certainly support the assumption that the distinction between stativity and activity is fundamental to Biblical Hebrew, the patterns themselves

³ The 'theme vowel' is the vowel between the second and third consonant in the verbal root. The distinction between *qātal* and *yīqtōl* is most commonly associated with the opposition between perfect and imperfect/non-perfect aspect respectively (Van der Merwe et al. 2017, §19; Waltke and O'Connor 1990, §§30–31).

cannot be taken at face value. Cook (2002, 202–3), however, following G. R. Driver (1936), argues that some verbs must be classified as stative verbs despite their apparent dynamic use (e.g., קרב ‘approach’ and לבש ‘clothe’), because they reveal an original stative sense. Even if this reconstruction of a diachronic development in Hebrew verbs were true, one may argue that it is more fruitful to classify the verbs according to their present usage in the Hebrew Bible, rather than according to etymology. Etymology and cognate languages certainly provide useful background information, but verbs may take on new meanings and uses without necessarily changing theme vowels.

Within the last three decades, a number of scholars have sought to explore other morphological correspondences with internal aspect. Ronald Hendel (1996), in his analysis of the correspondence between verbal conjugations (in particular, *qātal* and *yiqtōl*) and internal aspect, argued that there is a complex relationship between *qātal* and *yiqtōl*, internal aspect, and relative tense. According to Hendel, stative verbs refer to relative non-future in *qātal* and to relative future in *yiqtōl*. By contrast, dynamic verbs refer to relative past in *qātal* and to relative non-past in *yiqtōl*. By implication, for example, in a simple present frame, a stative verb would normally be *qātal* and a dynamic verb *yiqtōl*. However, Hendel also acknowledged that *qātal* and *yiqtōl* correlate with both viewpoint aspect (perfect vs imperfect) and mood (indicative vs modal).⁴ Thus, the Biblical Hebrew verbal system

⁴ The correlation between relative tense and *qātal/yiqtōl* in BH has most recently been readdressed by Siegismund (2018), who argues that the *qātal* merely indicates that an event is anterior to a temporal reference

is multidimensional and cannot be reduced to a simple mapping of dynamicity and verbal conjugations.

One of the most promising studies on the relationship between the Hebrew stems, the so-called *binyanim*, and semantic features was carried out by A. J. C. Verheij (2000), who set out to explore the forms and functions of the *binyanim* on a quantitative basis.⁵ It had long been postulated that certain stems are more telic than others, e.g., the *pi'el* is supposed to be telic while the *hif'il* is progressive. To test this and other hypotheses, he analysed the dependence of the Hebrew stems on four semantic parameters: dynamicity, telicity, agency, and transitivity. He found that there is in fact a significant correspondence between agency and transitivity on the one hand and stem on the other hand. Dynamicity and telicity, by contrast, were far more dependent on the lexical root of the verb than its stem. The present study diverges from Verheij's in important aspects. Most importantly, whereas I will propose a quantitative model for distinguishing dynamic and stative verbs (§3.0), Verheij manually annotated his corpus with this feature. In other words, the features of dynamicity

point, in contrast to the *yiqtol*, which is non-anterior. As for the frequent occurrence of present tense states in the *qatal*, Siegismund argues that the form is a relic from a pre-BH period where it expressed a simple predication of the subject. According to Siegismund (2018, 87), then, in BH, present tense states in the *qatal* were reanalysed within the new verbal system, e.g., 'I know' (יָדַעְתִּי) could be reinterpreted as 'I have come to know'. Apart from this particular verbal form, Siegismund does not incorporate inherent aspect into his grammar of the BH verbal system.

⁵ For a concise introduction to the *binyanim*, see Dan (2013).

(as well as telicity, agency, and transitivity) are presupposed in his statistical analysis. At the basis of his work, therefore, lies a qualitative analysis of the verbs under consideration. My statistical model does not presuppose semantic features, but rather employs syntactic features to suggest semantic differentiation. Another important difference between Verheij's study and the present one is his concept of agency. It has already been explained that agency is a multifaceted concept and can hardly be thought of as a binary category (see chapter 4, §2.0). Verheij, however, treats all his semantic features as binary categories for the sake of his statistical model.⁶ Moreover, each combination of root and stem is given only one set of features. This sort of annotation implies that all combinations of, e.g., הלך 'walk' and *qal* (1,412 attestations in Verheij's corpus) have exactly the same semantic properties (see Verheij 2000, 84). Thus, his annotations are contextually insensitive. However, as argued above, agency is a multifaceted parameter and rarely a lexical property. Therefore, the notion of agency depends on the linguistic context and not only on the verb. The sentences with 'break' (see chapter 4, §2.0) illustrate this well in that the notion of agency depends on the intentionality and animacy of the actor. Thus, considering agency

⁶ Verheij (2000, 8) is well aware of the limitations of his model (and quantitative models in general). As he notes, "in-depth quantitative analysis [...] entails simplification. It cannot detail the semantic richness of individual words, the way philological scholarship can. In particular, it will reveal general trends and make claims against which counter-examples can be brought forward, as trends never account for all cases. The loss of nuance, however, is compensated by the gain in completeness and the generalizability of the results."

to be a binary, lexical property is a gross simplification of this semantic feature. In short, therefore, the present study diverges significantly from Verheij's in that Verheij presupposes semantic features for his study of *binyanim*, while my study aims to discern syntactic and morphological clues by which those semantic features might be identified. Nevertheless, Verheij was a pioneer of applying quantitative methods to the study of Biblical Hebrew, and his work has merit in that respect.

In a more recent study, Christopher Jero (2008) likewise explores the relationship between internal aspect and the morphology of Biblical Hebrew verbs. Although his study was limited to the lamentation psalms of the Psalter, the conclusions may be extended to the rest of the Hebrew Bible. Jero (2008, 87) observes that, for present temporal frames, "Activities and simple states appear as *yiqtol*. Resultative states, whether of resultative events or developmental verbs, appear as *qatal*." However, the proposed correlation between morphology and internal aspect does not include all verbs, and Jero (2008, 87–94) explicitly counts speech verbs, morphological states, verbs of location, and translocative verbs (motion verbs) among "exceptional" cases where the correlation is less than clear. The limits of the correlation are important, because, at least in CBH (Genesis–Kings), speech verbs, motion verbs, and locative verbs are abundant. At a more fundamental level, Jero's analysis relies on some of the same assumptions as did Hendel's earlier work. According to Jero (2008, 67), the largest correspondence between verb conjugation and internal aspect is observable in present temporal frames—but it is not clear how those present temporal frames are identified

in the first place. Since Jero wants to compare the functions of present tense forms and modal forms (including various petitionary forms), he first needs to distinguish indicative and modal forms. He considers various textual evidence, including morphology (long and short forms of the *yiqṭōl*) and word order. In the end, however, Jero (2008, 35) concludes that, although “deontic forms prefer first position” in the clause, he has “ultimately relied on [his] admittedly subjective interpretation of [...] each context.” Jero’s project demonstrates a general weakness in the study of the correspondence between morphosyntax and semantics. Our conclusions are only as strong as our data model, and if we cannot be sure that a particular use of the *qātal* or *yiqṭōl* is present or past, indicative or modal, we can only guess as to its correspondence with the internal aspect of the verb.

In his grammar of the BH verbal system, Jan Joosten (2012) rejects a clear correspondence between verbal morphology and internal aspect. On the contrary, he proposes a number of syntactic constructions that correspond with internal aspect, at least to some extent. According to Joosten (2012, 90), the predicative participle (in the sequence Subj-PTC) “adds a nuance of ongoing action comparable to that of the English progressive tenses.” One would expect this construction to be far more compatible with verbs of duration than verbs of punctuality. Joosten offers the difference between *ח נבט* H ‘look’ and *ג ראה* G ‘see’ as an example. The former never occurs as a predicative participle, while the latter does so frequently. A survey of the verbs in the Hebrew Bible for which the participle is attested at least 25 times sheds further light upon Joosten’s thesis. The survey was carried out by

exploring the syntactic role of participles based on the annotations of the ETCBC database. The ETCBC database distinguishes between part-of-speech and phrase-dependent part-of-speech. The former annotation is the result of a morphological analysis of the Hebrew text. The latter annotation is the result of a linguistic analysis of phrases in order to investigate whether a participle has a function above the phrase level (e.g., as a predicate), or whether it functions as a noun within a construct-chain of nouns. Put differently, the part-of-speech tagging comes from a distributional analysis, while the phrase-dependent part-of-speech annotation is the result of a functional analysis.⁷ A participle may thus function as a predicate (3), adjective (4), or noun (5), as the following examples illustrate:

(3) וְדָוִד יֹשֵׁב בַּמִּדְבָּר

‘But David **was sitting** in the desert’ (1 Sam. 26.3)

(4) אִשָּׁה זֹנָה וְחַלְלָה לֹא יִקְחוּ

‘They may not marry **a prostituted** or defiled woman’ (Lev. 21.7)

(5) וַיֹּאמֶר מֶלֶךְ מִצְרַיִם לְמִיֻּדָת הָעִבְרָיִת

‘And the king of Egypt said **to the midwives** of the Hebrews’ (Exod. 1.15)

If the proportions of the part-of-speech functions are calculated for each verb, a graph can be plotted (Figure 5). As the graph shows, verbs such as אמר ‘say’, כתב ‘write’, and נגע ‘touch’ are only attested as predicates (= verb in the graph), and these verbs

⁷ For a detailed account, see Talstra and Sikkell (2000).

in order to express ‘lying down’ rather than ‘falling’. Thus, even though participles, given their progressive and durative aspect, may be more frequently attested with non-punctual verbs, punctual verbs are not excluded *per se* from this construction. This observation compromises the use of participles as a diagnostic clue to the internal aspect of verbs.

2.2. Syntax

A number of Hebrew linguists have followed Henk J. Verkuyl (1972) in seeing *Aktionsart* as a compositional entity. In his treatment of *Aktionsart* in Biblical Hebrew, Creason (1995) explored how the respective properties of verb and arguments (called participants) contribute to the overall situation depicted in the sentence. He ends up with eight *Aktionsart* classes, including state, semelfactive, atelic achievement, telic achievement, unchanging activity, changing activity, accomplishment, and complex situation (Creason 1995, 72–73). In his study, Creason (1995, 5) sought to account for verbal ambiguity, that is, when there is a “potential for ambiguity which is inherent in the nature of a verb;” hence, said verb can refer to two or more different situations. Creason (1995, 73) explored stative verbs in detail because this verbal class offers a “primary example.” According to Creason, stative verbs can refer to real states, but they can also refer to ‘change of state’ and to ‘remain-in-state’. The first subclass, ‘change of state’, seems to cover the ingressive aspect, e.g., “The land became ritually unacceptable” (Lev. 18.25).⁸ Importantly

⁸ In RRG, the ingressive aspect is treated as an operator that can modify the *Aktionsart* of a given verb (see chapter 4, §4.0).

for the present discussion, Creason (1995, 75) offered two guidelines for distinguishing regular state and change of state, namely, a punctual adverbial in the clause, or a narrative context for the clause. It appears that the narrative context of Lev. 18.25 is the reason for Creason's interpretation of *טמא* 'unclean' ('ritually unacceptable' in Creason's translation) as a change of state. As for the subclass 'remain-in-state', it involves clauses where the state is entailed as having existed for some time, in contrast to regular states, where this particular aspect is not important. Creason offered Gen. 11.12 as an example: "When Arpachshad had been alive for/remained alive for/lived for 35 years, he begot Shelah." Creason (1995, 77) argued that the "example may be interpreted as referring to a state (be alive) or an event (remain alive/live)."

The so-called verbal ambiguity was later explained by F. W. Dobbs-Allsopp (2000) within the framework of 'privative oppositions' offered by Olsen (1997). Because stativity is a cancellable feature, states can be cancelled for stativity and thus become dynamic. The means of cancelling the stative aspect involve sentential complements and pragmatic contexts, such as a "narrative sequence" or a "punctiliar frame" (Dobbs-Allsopp 2000, 44–45). Above all, fundamental to this approach is the claim that the dynamic interpretation does not arise as a result of the verbal root itself or the conjugation of the verb, but is "implicated from the pragmatic context" (Dobbs-Allsopp 2000, 34).

Creason's and Dobbs-Allsopp's contributions explain well how the pragmatic context influences the situation expressed by the sentence at large. However, this particular approach also seems to presuppose a knowledge of which verbs are stative and

which are dynamic. It is difficult to apply these criteria to identify states and activities respectively, because the same diagnostic clues can, according to the models of these two authors, yield both states and activities. A narrative sequence, for example, may cancel the stative aspect of a stative verb, but it may also simply be used with a dynamic verb. Consequently, given these theories, the *Aktionsart* of verbs can only be assumed, not falsified.

Relevant to this discussion are Janet W. Dyk's important studies of valence patterns in Biblical Hebrew. Together with her research team, she has published a series of articles discussing the meaning of verbs within the context of the clause (Dyk 2014; Dyk et al. 2014; Glanz et al. 2015; Oosting and Dyk 2017). Above all, their goal was to identify the syntactic circumstances under which a particular meaning of a verb is to be preferred (Dyk, Glanz, and Oosting 2014, 3). According to valence theory, verbs can be divided into groups of valency, that is, into groups characterised by a fixed number of arguments. For instance, the verb in 'he kicks the ball' has two arguments, a subject and an object, and is thus transitive (Dyk et al. 2014, 4). In order for a verb to be grammatically correct, it needs a certain number of arguments, depending on some lexical property of the verb. Thus, through analysis of valence patterns, a window is opened into the semantics of the verb. In natural language, however, verbs are normally attested in a variety of syntactic constellations of different transitivity. The verb 'eat', for example, may occur without an object, as in 'he eats', but it may also occur with an object, as in 'he eats an apple'. This phenomenon is called valence expansion or valence reduction, depending on which valence pattern is

thought to be the inherent valence pattern of the verb. The project undertaken by Dyk and her team aimed to collect all valence patterns in the Hebrew Bible and thereby provide a quantitative basis for determining the inherent valence of any Hebrew verb (Dyk, Glanz, and Oosting 2014, 5). As a bottom-up approach, beginning with the syntactic constituents of the text and observing their distributional patterns, this valence approach is to be commended. At the end, however, we are confronted with a fundamental question: Is the most frequent valence pattern evidence of the core meaning of the verb, or should the core meaning of the verb rather be construed from its simplest construction? As an example, עשה 'make' occurs most frequently with a single object, but it is also attested without an object. The former view would construe the core meaning of עשה as 'do', 'make', 'perform', 'observe', while the latter view would interpret its core meaning according to its simplest pattern: 'act', 'take action' (Dyk, Glanz, and Oosting 2014, 18). Consequently, valence-pattern recognition provides a quantitative basis for identifying verbs of similar behaviour, but it does not by itself yield the core meaning of the verbs.

Recognising this fundamental problem, Nicolai Winther-Nielsen (2017) offered a different approach to verbal valence, exemplified in his account of נתן 'give' in Genesis.⁹ In contrast to a bottom-up, distributional approach, Winther-Nielsen employed

⁹ In a previous work, Winther-Nielsen (2016) classified the 100 most frequent verbs in the Hebrew Bible according to the RRG theory of *Aktionsart* and logical structures.

RRG as a framework for linking Hebrew syntax to universal semantic event structures. According to this framework, meaning cannot be captured simply by procedural rules or by semantic classification of the arguments. Rather, the meaning of a verb arises from mapping universal semantic roles onto language-specific structures. Essentially, and as explained earlier (chapter 4, §4.0), the semantic mapping is handled by lexical decomposition of the verb in order to retrieve its *Aktionsart* and logical structure. As an example, נתן ‘give’ retrieves from the lexicon its ditransitive logical structure, that is, a causative accomplishment of possession: [**do**’ (x, Ø)] CAUSE [BECOME **have**’ (z, y)]. Other senses of נתן are retrieved by modifying this basic logical structure into, e.g., causative accomplishment of location (‘to place’): [**do**’ (x, Ø)] CAUSE [BECOME **be-in**’ (z, y)]. The strength of the RRG framework is its linking of syntax and semantics, and, consequently, its ability to account for a diversity of verbal senses while maintaining a core meaning of the verb. On the other hand, this approach seems to assume some existing knowledge of the lexicon, including the *Aktionsart* of the verb—knowledge that we cannot always take for granted.

3.0. A Collostructional Analysis of Verbs and Spatial Modifiers

As discussed above, qualitative approaches to lexical decomposition have serious drawbacks for a language like Biblical Hebrew. Therefore, the purpose of what follows is to propose and demonstrate a quantitative analysis of Biblical Hebrew verbal predicates. A quantitative approach takes seriously the frequency of a

constellation, based on the assumption that frequency more or less reflects “degrees of conventionalization” of linguistic units or structures (Schmid 2010, 117; see also 2000). This assumption may not always hold, of course, but the assumption seems important for a language like Biblical Hebrew where we do not have access to the lexicon apart from the extant text. Roughly speaking, if a verb occurs more frequently with a directional adverbial than with a locational adverbial, the verb would be assumed to be dynamic rather than stative. In fact, as will be unfolded below, the statistical computation is more sophisticated than merely counting frequencies. Nonetheless, frequency matters, and it is the most controlled way of analysing verbal aspect.¹⁰ In some respects, the proposed method aligns with Dyk’s valence approach in that it looks for patterns and emphasises the role of frequency (see §2.2). On the other hand, I shall not argue that a Biblical Hebrew lexicon can be created on the basis of strict, generative rules. Rather, it is my contention that a quantitative analysis of verbs and their modifiers can serve as a falsifiable basis for understanding the most primitive notions of internal aspect, in particular the dynamicity opposition. In this respect, a quantitative

¹⁰ It is a common misunderstanding, however, that quantitative, corpus-linguistic methods are not subjective. On the contrary, they are indeed subjective, because the annotation of the corpus, the choice of which features to explore, the size of the corpus, and the statistical algorithms employed are all subjective choices. Nevertheless, as Glynn (2010, 242) argues, “It is not objectivity that quantitative analysis offers us, but a better and more varied way of verifying the results. Seen from this perspective, quantitative methods are all the more important for subjective semantic analysis.”

analysis is only the first step towards creating a Biblical Hebrew lexicon. Understood this way, the primitive semantic notions derived from a quantitative analysis can inform the RRG logical structures and thereby justify a full-fledged verbal analysis within the framework of RRG.

The analysis proposed is a so-called collostructional analysis of predicates and their spatial modifiers. The collostructional analysis was developed by Anatol Stefanowitsch and Stefan Th. Gries (Stefanowitsch and Gries 2003; see also Gries and Stefanowitsch 2004; Stefanowitsch and Gries 2005) within the framework of Construction Grammar.¹¹ The constructions to be considered in this study are verbal predicates in the *qal* and complements headed by one of five different prepositions (אֶל ‘to’, לְ ‘to’, בְּ ‘in’, מִן ‘from’, and עַל ‘upon’), as well as complements containing the so-called directional ה-. Three examples of these constructions are:

(6) וַיֹּאמֶר אֶל-הָאִשָּׁה

‘And he said **to** the woman’ (Gen. 3.1)

(7) בְּתִרְצָה מִלְּךָ שֵׁשׁ-שָׁנִים:

‘He reigned **in** Tirzah for six years.’ (1 Kgs 16.23)

(8) וַיֵּרֶד אַבְרָם מִצְרָיִם

‘And Abram went down **to** Egypt’ (Gen. 12.10)

¹¹ Construction Grammar is characterised by the assumption that all levels of grammatical description—not only the lexicon, as traditionally stated—are symbolic units of form and meaning. For a recent introduction to Construction Grammar, see Hoffmann and Trousdale (2013; see also Goldberg 1995; Fillmore 1988).

In what follows, the method, corpus, and results will be discussed in turn.

3.1. Method

A collocation analysis is similar to traditional collocational analyses to the extent that it measures the strength of association of the word under investigation with another word in the constructional context. However, traditional methods do not take the syntactic structure into account, but simply measure the strength of association between two items within a certain distributional distance. A collocation approach, on the other hand, takes syntax into account and looks specifically at the relationship between the target word and another word in a particular syntactic position (Stefanowitsch and Gries 2005, 5). Thus, a collocation method enhances the likelihood of capturing significant relationships within a well-defined construction. Importantly, the analysis is not based on the raw frequencies of collexemes. On the contrary, the analysis applies distributional statistics in order to compare the frequency of a target word in a particular construction to the frequency of the word in other constructions and the frequency of the construction with other words. In practice, the researcher creates matrices containing the cross-tabulations of the two variables under consideration. Table 4 below shows the contingency table (Stefanowitsch and Gries 2005, 6–7):

Table 4: Contingency table of collocations

	Construction X	¬X (all other constructions)
Word L	1. freq. (L + X) <i>All attestations of the word in the given construction</i>	3. freq. (L + ¬X) <i>All attestations of the word outside the given construction</i>
¬L (all other words)	2. freq. (¬L + X) <i>All other words in the given construction</i>	4. freq. (¬L + ¬X) <i>All other words and all other constructions in the corpus</i>

As an example, the predicate אמר 'say' and the prepositional complement phrase headed by לְ 'to' are considered (see example 6 above). The frequencies are extracted from the corpus (Genesis–Kings; see below). As can be seen in Table 5, there are 928 constructions in the corpus where someone talks to someone. Although לְ is a frequent preposition, there remain only 829 attestations of it with other verbs. In addition, it is calculated how many times the verb occurs with other complement phrases (385), and finally, the frequency of all other complements and all other verbs (38,440).

Table 5: Contingency table of אמר 'say' and לְ 'to'

	לְ 'to'	¬ לְ 'to' (all other complement phrases)	Row totals
אמר 'say'	928	385	1,313
¬ אמר 'say' (all other verbs)	829	38,440	39,269
Column totals	1,757	38,825	40,582

On the basis of contingency tables like this one, two important statistical measures can be computed: Attraction and Reliance. The former reflects the degree to which the construction attracts the target word; the latter reflects the degree to which the lexeme

depends, or relies, on the construction (Schmid 2000, 54–57). In this concrete example, we would expect a high attraction score as well as a high reliance, because the construction occurs most frequently with this particular predicate, and because the predicate occurs most frequently in this particular construction. It is common, however, to use the Fisher-Yates Exact test, which provides a uniform measure of association strength, that is, the lower the value, the stronger the association (Stefanowitsch and Gries 2003, 218). Another measure is ΔP (Ellis 2006; Ellis and Ferreira-Junior 2009), which is preferred here because it maintains the bidirectional association strength and includes the corpus size (in contrast to Attraction and Reliance).¹² However, as has been demonstrated, each measure has its own advantages and drawbacks, so the use of multiple scores enhances the robustness of the analysis (Schmid and Küchenhoff 2013).

¹² ΔP ‘delta P’ is a bidirectional, statistical measure of the probability that a given construction attracts a lexeme (ΔP Attraction) and that a given lexeme relies on a construction (ΔP Reliance). Thus, in contrast to Fisher-Yates Exact, which gives one measure of association, ΔP provides two measures, seen respectively from the construction and from the lexeme. Both measures are important, because they are not necessarily reciprocal, that is, a lexeme may rely heavily on a construction, but the association may not be mutual, since the construction may attract other lexemes more heavily. For a technical description, see Ellis (2006, 11). For an evaluation of statistical measures commonly applied in collocation analysis, see Schmid and Küchenhoff (2013).

3.2. Corpus

The corpus selected for the analysis is the Classic Biblical Hebrew (CBH) corpus, i.e., the books of Genesis–Kings.¹³ The corpus consists of 40,582 clauses, 6,403 of which have a predicate, a single complement phrase and no object. The great majority of the complement phrases are prepositional phrases (5,882).¹⁴ The five most frequent prepositions (לְ ‘to’, לָ ‘to’, בְּ ‘in’, מִן ‘from’, and עַל ‘upon’) have primarily spatial senses. Each of them, however, can be used in a diversity of ways. בְּ ‘in’, for instance, is deployed in the very first sentence of the Hebrew Bible as a temporal modifier (Gen. 1.1). The five prepositions each form one distinct construction type in this analysis. Another, less frequent, type is the complement with a directional ה-. The directional ה- is an adverbial suffix with a distinct directional meaning, roughly equivalent to the English *-ward* (e.g., ‘upward’; Waltke and O’Connor 1990, §10.5). This directional ה- is the sixth complement type for this collostructional analysis. An overview of the constructions, including their frequencies in the corpus, syntax, and primary functions, is given in Table 6. As for the predicates, only predicates

¹³ Although it is common to distinguish CBH and LBH (see n. 1), “the Hebrew Bible exhibits a remarkable degree of linguistic uniformity” (Hornkohl 2013). Nevertheless, the two corpora exhibit morphological, syntactical, and lexical deviations (see examples and discussion in Hornkohl 2013). For this reason, it is appropriate to limit the research to CBH, in which Leviticus is contained.

¹⁴ The remaining complement phrases are adverbial phrases (269), nominal phrases (126), proper noun phrases (119), and interrogative phrases (7). Due to low frequency, these phrases are not included.

attested at least 10 times with these constructions were included.¹⁵ Accordingly, 62 verbs were included, with a total of 4,933 attestations.

Table 6: Overview of constructions considered for the collostructional analysis of verbs in CBH

Preposition	Frequency	Syntax	Primary function(s)
לְ 'to'	1,717	-	directional, addressee
לְ 'to'	1,124	verb + complement phrase headed by preposition	recipient, beneficiary, directional
בְּ 'in'	907	-	place, instrumental, temporal
מִן 'from'	594	-	source, comparative
עַל 'upon'	367	-	place, adversary
directional הַ-	224	verb + complement phrase including a word with directional הַ-	directional

One might raise an objection to this research design to the effect that the constructions under consideration need not be directional or locational; hence, how can we be sure that the outcome

¹⁵ A minimal frequency of 10 attestations has been chosen in order to avoid the statistical inaccuracies demonstrated for collocations of low-frequency words (Evert 2004, esp. chapter 4). According to Evert (2008, 1242), "Theoretical considerations suggest a minimal threshold of $f[\text{re-} \text{quency}] \geq 3$ or $f[\text{re-} \text{quency}] \geq 5$, but higher thresholds often lead to even better results in practice."

of the analysis corresponds to an opposition of activities and states? As a matter of fact, the prepositions considered are used in a multiplicity of ways in the Hebrew Bible, including in instrumental, temporal, adversative, and benefactive senses, among others. Even if the spatial sense is the primary sense in terms of cognition and frequency, the analysis most likely plots other senses as well. It might be tempting to manually annotate the constructions beforehand to sort spatial from non-spatial senses. However, this procedure would be hazardous for at least two reasons. Firstly, semantic annotations are commonly acknowledged as the most difficult type of annotation because they involve a great deal of subjective interpretation.¹⁶ Secondly, and importantly in the context of this study, predicates and complements are not independent. Consequently, the complement cannot be ascribed a semantic role (goal, beneficiary, location, source, etc.) independently from investigating the meaning of the predicate. In other words, since semantic roles reflect the interpretation of the predicate, complement annotations would compromise a quantitative analysis, because the verbs would (unconsciously) have been interpreted prior to the analysis itself. The method proposed here is therefore simply a pattern recognition analysis and does not directly address the dynamicity opposition. However, because we investigate several constructions, we can

¹⁶ For VerbNet, for instance, it was found that expert annotators agreed on the sense of verbs less than 80% of the time (Rayson and Stevensen 2008, 565; see also Fellbaum, Grabowski, and Landes 1998). If this is true for modern languages, it is even more so for ancient languages where we cannot rely on native speakers.

observe patterns of predicates that behave similarly with respect to this particular aspect.

3.3. Results

Extracts of the results of the collocation analysis are given in the tables below. A variety of statistical measures are provided, most importantly ΔP Attraction and ΔP Reliance, which are the preferred measures here.¹⁷ The tables also provide the raw frequencies of the words in the constructional patterns with respect to their frequencies in the corpus.

Table 7: Top 10 verbs relying on the לָא 'to' construction (ranked according to ΔP Reliance)

	freq. in pattern	Fisher-Yates Exact	ΔP Attraction	ΔP Reliance	Odds Ratio
צעק 'cry'	17/17	6.126e-24	0.0097	0.9571	inf
זעק 'cry'	11/12	1.121e-14	0.0062	0.8736	244.60
נגש 'approach'	18/20	4.595e-23	0.0102	0.8571	200.92
שלח 'send'	36/45	3.503e-41	0.0203	0.7575	90.22
פנה 'turn'	17/22	1.312e-19	0.0095	0.7298	75.86
קרב 'approach'	24/32	1.217e-26	0.0135	0.7073	67.20
אמר 'say'	928/1313	0.000e+00	0.5183	0.6857	111.77
בוא 'come'	269/476	8.091e-240	0.1478	0.5280	33.73
שוב 'return'	62/140	1.442e-46	0.0333	0.4009	18.17
שמע 'hear'	56/142	7.820e-39	0.0297	0.3523	14.83

Table 7 shows the top 10 verbs relying on the לָא 'to' construction according to the ΔP Reliance score. The list is dominated by motion verbs, but three speech verbs appear as well (צעק 'cry', זעק 'cry', and אמר 'say'). These speech verbs often attract לָא 'to' in order to express the addressee of the speech. The verb שמע

¹⁷ For explanation and evaluation of the other statistical measures, Fisher-Yates Exact and Odds Ratio, see Schmid and Küchenhoff (2013).

‘hear’ also appears in this table, probably because the verb does not always simply refer to simple perception, but also attentive listening, signalled by אָל.

The picture is different for the בָּ ‘in’ construction (Table 8). Some quite different verbs rely on this construction, including seemingly dynamic verbs, such as תקע ‘blow’, רחץ ‘wash’, פשה ‘spread’ (?), דבק ‘cling/cleave to’, פגע ‘meet’, and נגע ‘touch’. Two stative verbs, רעע ‘be evil’ and ישב ‘sit’, also rely significantly on this preposition. Unlike with the אָל construction, which was relied on predominantly by dynamic verbs, one cannot easily find a pattern of verbs relying on the בָּ construction.

Table 8: Top 10 verbs relying on the בָּ ‘in’ construction (ranked according to ΔP Reliance)

	freq. in pattern	Fisher-Yates Exact	ΔP Attraction	ΔP Reliance	Odds Ratio
תקע ‘blow’	27/27	7.335e-43	0.0239	0.9728	inf
רחץ ‘wash’	16/16	1.161e-25	0.0142	0.9726	inf
פשה ‘spread’	12/12	2.030e-19	0.0106	0.9725	inf
חפץ ‘desire’	10/10	2.671e-16	0.0089	0.9724	inf
דבק ‘cling/ cleave to’	17/18	5.583e-26	0.0150	0.9170	603.13
פגע ‘meet’	24/26	1.121e-35	0.0212	0.8958	428.43
משל ‘rule’	12/13	2.572e-18	0.0106	0.8955	423.84
נגע ‘touch’	32/35	6.509e-47	0.0283	0.8872	383.59
רעע ‘be evil’	15/17	5.456e-22	0.0132	0.8549	265.60
ישב ‘sit’	129/172	3.123e-164	0.1132	0.7253	118.23

In Table 9, the picture is consistent. All of the top 10 verbs relying on the directional ה- construction are motion verbs, a result consistent with the common understanding of the sense of this morpheme.

Table 9: Top 10 verbs relying on the directional ה- construction (ranked according to Δ P Reliance)

	freq. in pattern	Fisher-Yates Exact	Δ P Attraction	Δ P Reliance	Odds Ratio
נוס 'flee'	18/49	1.829e-28	0.0775	0.3621	110.43
ירד 'descend'	17/84	6.437e-22	0.0723	0.1971	47.99
שכב 'lie down'	3/18	1.377e-04	0.0127	0.1611	35.54
נפל 'fall'	12/75	1.569e-14	0.0506	0.1546	35.20
בוא 'come'	70/476	1.006e-78	0.2943	0.1431	43.05
עבר 'pass'	12/82	4.807e-14	0.0504	0.1410	31.68
הלך 'walk'	31/242	1.301e-32	0.1296	0.1232	29.64
עלה 'ascend'	17/142	7.599e-18	0.0708	0.1145	25.68
שוב 'return'	14/140	8.206e-14	0.0577	0.0947	20.69
פנה 'turn'	2/22	6.856e-03	0.0082	0.0853	17.69

On their own, the six constructions reveal the attraction and reliance of verbs and constructions. If, however, the six reliance scores for each verb are seen as six variables, statistical methods can be applied to measure the correspondences of these variables and plot the constructions and verbs according to similarity. Principal component analysis (PCA) is one such method.¹⁸ PCA was developed as a method for exploring multiple independent quantitative variables and reducing the variation, or spread, of these variables to the smallest possible number of dimensions, called 'principal components'. In short, the purpose of the method is to trade a little accuracy for simplicity. The method has been widely used for a diversity of data types, including linguistic data. In this case, the 62 verbs and the six constructions form a dataset of 62 rows and six columns. Using PCA, a two-

¹⁸ For introductions to PCA, see Levshina (2015, 351–66) and Jolliffe (2002).

dimensional map captures 64.05% of the variation in this dataset.¹⁹ The first component accounts for the largest possible variation, and the second for the second-largest variation. The resulting two-dimensional map projects the data according to their contributions to the component, as seen from the perspective of the centre of the plot. Accordingly, the data points near the extremes of the map are those that contribute the most to the component. The first two components are plotted in Figure 6 below. The first component accounts for 38.5% of the variation and captures the variation caused by the constructions *בְּ* ‘in’ on the right side, and *אֶל* ‘to’ and *מִן* ‘from’ on the left side. Significantly, all prepositions associated with direction, source, or goal are projected on the left side, while the preposition associated more with stative location is projected on the right side. The projection of individual verbs supports the notion of this opposition. Except perhaps for *קָצַף* ‘be angry’, *חִזַּק* ‘be strong’, *יִרָא* ‘fear’, and *צָרַר* ‘wrap/be narrow’, all verbs on the left side of the plot are seemingly dynamic verbs. The lower left side of the plot is dominated by motion verbs. The constructions of directional *ה־* and *עַל* ‘upon’ are situated close to the centre of the map, which is to be expected, since the frequencies, and, accordingly, the contributions of these variables are smaller than those of the other constructions.

As for the right side of the map, the picture is mixed. As would be expected, given the frequent locative use of *בְּ* ‘in’, prototypical stative verbs are found in this side of the plot, including

¹⁹ A three-dimensional map captures 85.15% of the variation.

ישב 'sit', שכן 'dwell', חנה 'encamp', שכב 'lie down', רעע 'be evil', יטב 'be good', and ראה 'see'. Curiously, a number of verbs do not easily fit into this pattern of stative verbs; in fact, most of the verbs clustering near ב in the plot do not. First, פשה 'spread' is, among the constructions under consideration, only attested with ב 'in'. It occurs only in Lev. 13 and 14, and the complement headed by ב signals the location of where a (skin) disease spreads.²⁰ Thus, the verb can easily be construed as an activity, and the preposition merely designates the location of that activity. The same is true of רחץ 'wash', where the preposition ב marks the location of bathing. That רחץ should be construed as an activity is supported by the frequentative temporal phrase 'seven times' in 2 Kgs 5.10.²¹ Another predicate, דבק 'cling/cleave to' occurs frequently with ב to mark the object or place to which someone or something clings.²² Similarly, ב is employed with נגע 'touch' to mark the object or place to be touched.²³ Finally, to conclude these examples, תקע 'blow' usually denotes blowing a

²⁰ See Lev. 13.5, 6, 7, 8, 34, 35, 36, 51, 53; 14.39, 44, 48.

²¹ "Go, and bathe (רחץ 'wash') seven times in the Jordan" (2 Kgs 5.10). רחץ occurs frequently with ב , always referring to the location of bathing; see Lev. 14.8; 15.5, 6, 7, 8, 10, 11, 18, 21, 22, 27; 17.15; Num. 19.19; Deut. 23.12; 2 Kgs 5.12.

²² See Gen. 2.24; 34.3; Num. 36.7, 9; Deut. 10.20; 11.22; 13.5, 18; 28.60; 30.20; Josh. 22.5; 23.8, 12; 2 Sam. 20.2; 1 Kgs 11.2; 2 Kgs 5.27; 18.6.

²³ See Gen. 3.3; 32.26, 33; Exod. 19.12, 13; Lev. 5.2, 3; 6.11, 20; 7.19, 21; 11.8; 12.4; 15.5, 11, 12; 22.5, 6; Num. 16.26; 19.16, 22; Deut. 14.8; Josh. 9.19; Judg. 6.21; 1 Sam. 6.9; 10.26; 2 Sam. 5.8 (?).

Thus, the first component exhibits an asymmetry, in that presumably dynamic verbs occur across the range of the component, while stative verbs are almost entirely restricted to the right side of the plot. These observations demonstrate the usefulness of a quantitative approach. While it may still hold true that stative verbs can become dynamic given the right pragmatic context, the observations so far demonstrate that dynamic verbs are more likely to occur with certain prepositions.

As for the second component, there is an interesting contrast between the constructions לְ 'to' and לָ 'to'. Apparently, the opposition between those two constructions is not one of activity but between directionality on the one hand and benefaction/malefaction on the other hand. A closer inspection of the verbs clustering around לָ 'to' supports this interpretation, as illustrated by the representative examples (9) to (13) below. Other examples that illustrate this interpretation are given in footnotes:

(9) וַתֵּצֵר לְדָוִד מְאֹד

'It was a great danger **for David**' (1 Sam. 30.6)²⁵

(10) וְנִזְבַּחַהּ לַיהוָה אֱלֹהֵינוּ:

'Let us sacrifice **to YHWH**, our God.' (Exod. 3.18)²⁶

²⁵ See also Gen. 32.8; Judg. 2.15; 10.9; 11.7; 1 Sam. 13.6; 28.15; 2 Sam. 1.26; 13.2; 24.14.

²⁶ See also Exod. 5.3, 8, 17; 8.4, 21, 22, 23, 24, 25; 32.8; 34.15; Deut. 16.2; 32.17; Judg. 2.5; 1 Sam. 1.3; 15.15, 21; 16.2, 5; 1 Kgs 8.63; 2 Kgs 17.35, 36.

(11) וְשָׂרַי אִשְׁתּוֹ אֲבְרָם לֹא יָלְדָה לּוֹ

‘Sarai, Abram’s wife, did not bear [any children] **for him**’
(Gen. 16.1)²⁷

(12) וַיִּשָּׂק הַמֶּלֶךְ לְאַבְשָׁלוֹם:

‘The king kissed **Absalom**.’ (2 Sam. 14.33)²⁸

(13) וַיֵּדַע אֵת אֲשֶׁר-עָשָׂה-לוֹ בְּנֵי הַקָּטָן:

‘and he knew what his youngest son had done **against him**.’
(Gen. 9.24)²⁹

The verb צָרַר consistently means ‘be in trouble/danger’ in this pattern (see example 9). The sentence is difficult to translate literally into English, but the person in trouble or danger is always marked by the preposition לְ, which suggests a malefactive interpretation. The constructions exemplified in (10) and (11) are always benefactive, that is, the participant marked by לְ benefits from the event (unless, of course, the sentence is negated, as in 11). נָשַׁק ‘kiss’ seems to be an exception to the pattern established so far. One may construe the object marked by the preposition לְ as a beneficiary, but perhaps more precisely as an experiencer. Finally, עָשָׂה ‘make’ almost always uses לְ to mark the beneficiary

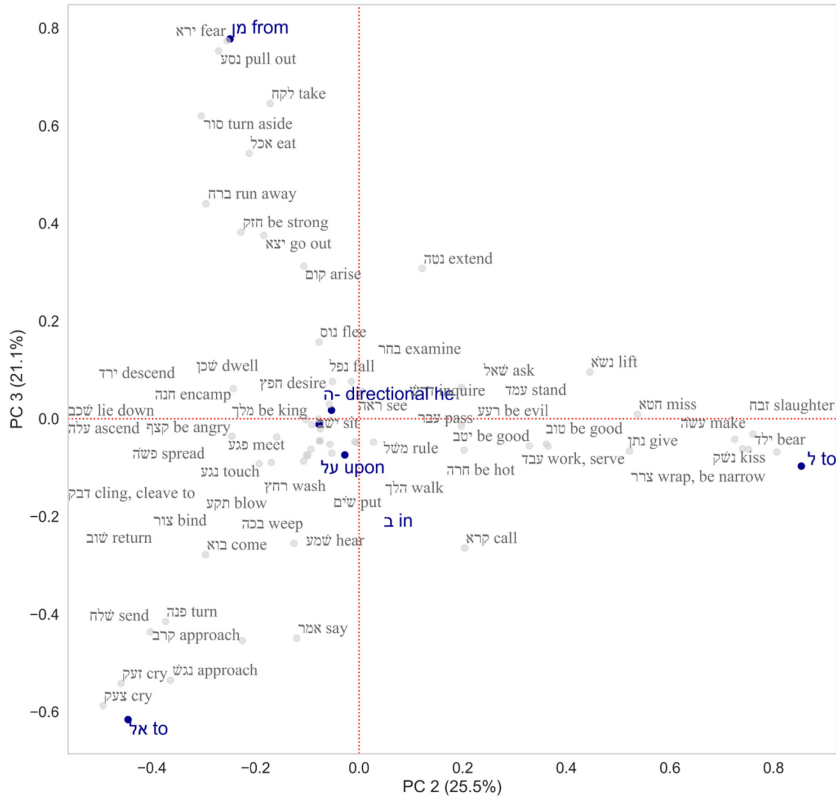
²⁷ See also Gen. 6.4; 17.21; 21.3, 9; 24.24, 47; 25.12; 30.1; 34.1; 41.50; 46.15, 20; 2 Sam. 12.15; 21.8 (× 2).

²⁸ See also Gen. 27.26, 27; 29.11; 48.10; 50.1; Exod. 4.27; 18.7; 2 Sam. 15.5; 19.40; 20.9; 1 Kgs 19.18, 20.

²⁹ There are 166 attestations of this collocation; see, e.g., Gen. 16.6; 19.8; 21.1; 27.45; 30.30; 39.19; 42.25; 50.12; Exod. 5.15.

or maleficiary of the event, as in (13).³⁰ In sum, apart from perhaps ‘kiss’, the five verbs forming a cluster around ל mark their beneficiary/maleficiary with this preposition.

Figure 7: Second and third component of the PCA



The third dimension accounts for 21.1% of the variation, and contrasts source (מן ‘from’) and goal (אל ‘to’), as visualised in Figure 7. Verbs easily associated with a point of departure are

³⁰ This observation corresponds with one made by Dyk et al. (2014, 13–14), where ל is said to mark either location or the argument affected by the event. Their observations, however, were made for עשה ‘make’ in ditransitive frames (with two objects).

found in the top left corner of the map, including נסע ‘pull out’, סור ‘turn aside’ (or rather, ‘depart’), ברח ‘run away’, יצא ‘go out’, נוס ‘flee’, נפל ‘fall’, and ירד ‘descend’. The verb לקח ‘take’ marks the source from where something is taken with מן (14), while ירא ‘fear’ is exceptional in this context, because the object to be feared is marked by this preposition (15).

(14) וְלָקַחְתָּ מִזֶּה הַדָּם אֲשֶׁר עַל-הַמִּזְבֵּחַ

‘And you shall take **of the blood** that is on the altar’ (Exod. 29.21)³¹

(15) וַיִּרְאֵתָ מֵאֵלֶיךָ

‘And you shall fear **your God**’ (Lev. 19.14)³²

In sum, the three most important components explored here correspond largely to lexical senses, although there is not an unambiguous distinction between states and activities. Importantly, however, the first component shows a distinction between directional/goal senses on the one hand and non-directional/non-goal senses on the other hand. The second component distinguishes direction and benefaction/malefaction, while the third component differentiates source and direction. Given the choice of adverbials to consider, it is not surprising that the directional sense dominates the picture, but it is instructive to observe how this sense is distinguished from other lexical senses.

³¹ There are 50 attestations of this collocation; see, e.g., Gen. 2.22; 3.6; 8.20; 14.23; 23.13; 28.11; 43.11; 48.22.

³² See also Exod. 9.30; Lev. 19.32; 25.17, 36, 43; Deut. 1.29; 2.4; 5.5; 7.18; 20.1; 28.10; Josh. 10.8; 11.6; 1 Sam. 7.7; 18.12, 29; 21.13; 28.20; 1 Kgs 1.50; 3.28; 2 Kgs 1.15; 19.6; 25.24, 26.

With respect to Lev. 17–26, 31 verbs from the collocation analysis are attested in this text. Not surprisingly, a number of these are motion verbs: עלה ‘ascend’, בוא ‘come’, שוב ‘return’, יצא ‘go out’, קרב ‘approach’, נגש ‘approach’, נוס ‘flee’, קום ‘arise’. These verbs all rely on directional adverbials and are therefore found in the directional half of the PCA model (the left half in Figure 6). Other presumably dynamic verbs are likewise found in this area of the graph (עשה ‘make’, אכל ‘eat’, אמר ‘say’, נשא ‘lift’, קרא ‘call’). A handful of presumably stative verbs are found in the right side of the plot as expected (עמד ‘stand’, שכב ‘lie down’, שמע ‘hear’, ישב ‘sit’, ראה ‘see’). A number of verbs diverge from the pattern. Most surprisingly, הלך ‘walk’ and עבר ‘pass’ are situated on the right side of the plot, albeit near the centre. As a motion verb, הלך would be expected to be associated more strongly with directional adverbials. On the other hand, the preposition בְּ is commonly used to denote the location of the event, sometimes figuratively as in (16).

(16) וּבְחֻקֹתֵיהֶם לֹא תֵלְכוּ:

‘And you must not walk **in their instructions**’ (Lev. 18.3)

Another verb is שים ‘put’, a transfer verb often denoting the translocation of an entity. Although expressing an activity, the verb is situated on the right side of the plot among presumably stative verbs. The reason is that the preposition בְּ designates the location where the entity is put or, as an adversative, the entity against which something is put, as in (17).

(17) וְשַׂמֹּתִי אֶנְי אֶת־פָּנָי בְּאִישׁ הַהוּא וּבְמִשְׁפַּחָתוֹ

‘I will put my face **against that man and against his clan**’
(Lev. 20.5).

The case of שים illustrates a more general complication for the methodology applied here. As a transfer verb, שים involves a dynamic event and a static endpoint, and cannot therefore be considered *either* an activity *or* a state. Thus, the methodology applied here works best with simple verbs that express either a dynamic event or a static situation. For complex events, including transfer verbs, a distributional analysis must at least be accompanied by a more logical interpretation of the verb, so as to conceptualise the internal composition of the semantics of the verb.³³

4.0. Conclusion

The collostructional analysis of Hebrew verbs proposed in this chapter was an attempt to take a step backwards and consider how broad semantic notions can be gleaned from the Hebrew Bible on a more objective basis than has usually been achieved. The collostructional analysis was carried out on 62 verbs and six constructions with assumed spatial notions (directional or locational). A principal component analysis of the collostructions yielded significant distinctions between directionality and non-directionality (first component), directionality and benefaction/malefaction (second component), and goal and source (third component).

³³ Other surprising verbs have already been discussed, including רָא ‘fear’, נָגַע ‘touch’, and רָחַץ ‘wash’, also attested in Lev. 17–26.

The analysis provided modest results with respect to Lev. 17–26. Most verbs of the text were not captured by the collostructional analysis because of the obvious bent of the model towards directionality. More generally, the challenge remains that many Hebrew verbs occur infrequently, and are rarely found with adverbial modifiers. Thus, like other approaches, this methodology applies most effectively to frequently attested verbs. On the other hand, most verbs in H targeted by the analysis conformed to the distinction between directionality and non-directionality. To yield more semantic distinctions, more collostructions could—and should—certainly be considered. Temporal adverbials, for instance, could contribute important temporal distinctions that might help to support or falsify the observations made in this analysis.