Identifying ASL compounds: A functionalist approach

Abstract
In many descriptions of ASL, signs like [breakfast] are identified as compounds. These were once formed with two separate signs, which have since fused into a single unit. This paper presents an alternative definition of *compound* that includes both functional and formal properties. Following this updated definition, examples of ASL compounds are constructions like [name sign] and [sign language] which combine two object-concept words to name an object concept, as well as related constructions like [formal room] 'living room' which also label object concepts. The updated definition of compound allows for terminological consistency and sets the stage for fuller understanding of the variety of multi-sign units in ASL.

<1> Introduction
In analyzing and describing the languages of the world, linguists must balance two competing goals. First, languages should be described in their own terms. Human languages exhibit extraordinary variety, and terms that identify a grammatical concept in one language (such as Latin *ablative case* or English *gerund*) cannot be imposed on other languages without the risk of misunderstanding the phenomenon at hand. However, the second goal is that languages should be described with consistent terminology, when possible. The languages of the world exhibit remarkable similarities, and linguists find it useful to compare across languages to understand the human capacity for language. It is therefore important to use common terminology (such as *modifier* or *verb*) consistently.

This paper examines one concept, *compound*, with these goals in mind. In the study of ASL (American Sign Language) structure, compounds have typically been understood using a structuralist definition taken from English linguistics (e.g., Marchand 1969). In particular, Klima and Bellugi's (1979, p202) pioneering study of ASL uses the English compound *wetsuit* to guide the discussion of ASL compounds. Klima and Bellugi note that *wetsuit* is non-compositional; it does not describe any 'damp outfit', but instead conventionally names a specific athletic garment. English *wetsuit* also has a rhythmic pattern that distinguishes it from other English constructions. Klima and Bellugi extend these criteria to ASL, and identify a variety of units that also have specialized meanings and rhythmic patterns, which they call "compounds".

However, it has been known for quite some time that not all English compounds, and not only compounds, are like *wetsuit*. Several studies have also sought to define compounds in a way that can be applied across a variety of languages (e.g., Lieber and Štekauer 2009; Bauer 2017; Pepper 2020). During this time, the definition of compound in ASL linguistics has stayed very close to Klima and Bellugi's (1979) original, structuralist formulation (but see Vercellotti and Mortensen 2012).

This paper rejects the structuralist definition described above and instead adopts Pepper's (2020) cross-linguistic definition of compounds as binomial constructions, to facilitate the identification of compounds in ASL. From a functionalist perspective, (binomial) *compounds* are

constructions in which an object modifier sub-classifies a head noun. Accordingly, this paper argues that the majority of units previously identified as "ASL compounds" should not be considered compounds, at all. Instead, the general label *collocation* can be used to name structural units that are made up of two or more words. Some collocations also undergo *univerbation*, or reduction that obscures their original internal structure, according to how frequently they are used. However, univerbation does not uniquely affect compounds. Under the functionalist definition, ASL units such as [name sign], [peanut butter], and [sign language] can be considered "prototypical" compounds. Constructions such as [formal room] 'living room' and [exercise program] can also be considered compounds in ASL, though they deviate from the cross-linguistic prototype. The paper ends by reviewing the functionalist definition of compound and providing suggestions for future research on compounds and other collocations in ASL.

<1> *Compound* as a functionalist concept

<2> Functionalist morphosyntax

Croft (2022) presents a functionalist approach to morphosyntactic analysis, building on Croft (2001). In this approach, a *linguistic construction* is defined as a pairing of *function* and *form* that is conventional within a language community. Function encompasses both semantic content (which Croft abbreviates as *sem*) and information packaging acts (abbreviated *inf*). Form refers to the combination of morphological and syntactic material that characterizes the construction. A functionalist analysis identifies the forms that language users employ to express particular functions in the constructions of the languages of the world.

Croft illustrates this functionalist approach using *word classes* (traditionally *parts of speech*). Word classes are not *a priori* structural categories that are uniform for all languages. Instead, word classes are identified by the constructions of the particular language in which they occur. As Croft notes, the constructions that define word classes are often referred to with other terms such as *tests* or *criteria*. The English word class Adjective, for example, refers to words that participate in the constructions in (1):

(1) Constructions that are used to identify (some) English Adjectives
  (a) modifiers of Nouns: *A* ***happy*** *linguist*
  (b) complements of copula Verbs: *This linguist is* ***happy****.*
  (c) accept comparative morphology: ***happier***, ***happiest***
  (d) modifiable with degree Adverbs: *very* ***happy***

English property words like *happy* and *tall* can appear in these various constructions. This is what it means to say that English has a coherent (though varied) class of words called Adjectives. However, suppose a linguist wanted to determine if ASL also has a coherent class of "adjectives" (cf. Loos 2022, Kimmelmann and Börstell in press). It will not work to use English-specific morphosyntactic constructions to identify ASL word classes. Instead, the question is whether there is a class of words in ASL that are defined by their occurrence in ASL constructions, that could also be called "adjectives". The basis for using the same label for an

English word class and an ASL word class would be that they have similar functions. Again, for Croft, function refers to two dimensions of meaning, outlined in (2):

(2) Croft (2022)'s functional taxonomy
  (a) Semantic concepts
    (i) **Objects**: concepts that are autonomous, stative, and persistent
    (ii) **Properties**: concepts that are relational, stative, and persistent
    (iii) **Actions**: concepts that are relational, dynamic, and transitory
  (b) Propositional information packaging acts
    (i) **Reference**: what the language user is talking about
    (ii) **Modification**: additional information provided about the referent
    (iii) **Predication**: what the language user is asserting about the referent(s)

Function encompasses semantic concepts and how they are used. Keeping with the example of "adjective", Croft names property words (*sem*) that are used for modification (*inf*) *prototypical adjectives*. In addition, languages use a variety of morphosyntactic *strategies* (which Croft 2022 abbreviates as *str*) to signal when semantic concept words are used for *non-prototypical* propositional acts for that concept. For example, use of property words for predication (*predicate adjective* constructions) may follow a verbal copula strategy (as in English), or a juxtaposition strategy (as in ASL), or some other range of strategies. The linguist's job is to identify the forms of a language that are used to code these various functions that languages serve for their users, that is, to fill in the cells defined by the functional taxonomy (Table 1).

Table 1. Croft (2022)'s functional taxonomy as a two-dimensional space, with examples illustrating some English coding strategies. Formal coding signals that **concept words** are used in various (non-prototypical) propositional acts.

	Propositional Acts		
Semantic concepts	*reference*	*modification*	*predication*
object	the **book**	the heaviness of the **book** the **book**'s arrival	That is a **book**.
property	the **heavi**ness (of the book)	a **heavy** book	The book is **heavy**.
action	the (book's) **arriv**al that the book **arrived**	the book that **arrived** yesterday	The book **arrived** yesterday.

Croft's approach is useful for cross-linguistic analysis because of how it defines the space of the analysis. Semantic concepts (*sem*) can be used for any propositional acts (*inf*), and a variety of strategies (*str*) may code these combinations, within and across languages. Croft (2022)

distinguishes and defines concepts, acts, and strategies so that they can be used to describe the constructions of the world's languages consistently.

Relevant for compounds, Croft (2022, p140) notes that not only are object modifier constructions (the top center cell in Table 1) coded by a range of formal strategies, but they also accomplish a variety of more granular functions. For example, the English Genitive -*'s* can modify Nouns in a way that *anchors* them to particular referents (the example Croft provides is *Peter's bag*) or in a way that characterizes or *typifies* them (*women's magazine*). The difference between anchoring and typifying is that a typifying construction refers to a subclass of the head referent and the object modifier is non-referential, whereas the modifier of an anchoring construction is referential (Koptjevskaja-Tamm 2002, 2004; Pichler and Hochgesang 2008).

Across languages, a variety of formal strategies are used for typifying/sub-classifying functions. Referring to Pepper (2020), which is described in more detail below, Croft suggests that a graded distinction can be made between *typifying constructions*, which classify, describe, or qualify the modified referent, and *binomial constructions*, which are former typifying constructions that have become conventional labels that refer to a "single" object concept. There is not a crisp line that divides subclassification and reference, and Croft suggests that there is a continuum along which modifying constructions are increasingly conceptualized as referring constructions:

(3) Croft's (2022, p143) diachronic continuum from object modifier to reference
anchoring construction → typifying construction → binomial construction → simple noun

When discussing "compounds", then, it is important to distinguish the functions that are accomplished, namely to classify and to refer, from the strategies that can be used to signal those functions, such as the use of an object concept word as a modifier. These two parameters set the stage for a "comparative concepts" definition that can be used to discuss ASL compounds in a cross-linguistic sense (Haspelmath 2010, Croft 2016, Pepper 2020).

<2> Compounds, function and form

Strictly speaking, Croft classifies compounding as a morphosyntactic *strategy* in which two words are combined to form a single unit (Croft 2022, p678). However, compounding is closely associated with the typifying *function*, where an object modifier sub-classifies the head noun that it modifies (Croft 2022, p742). It is also difficult to separate compounding from similar morphosyntactic strategies like juxtaposition or incorporation, which also combine two elements into a single unit (Croft 2022, p704, 714). For this reason, I do not use *compound* to refer to the formal strategy of combining two words, separately from that unit's sub-classifying function,

here.[1] As is discussed below, I instead use the term *collocation* as an umbrella term to refer to conventional units that contain two (or more) identifiable words.

For further discussion of function and form in compounding constructions, Croft (2022) points to Pepper (2020); the subtitle of this dissertation is "noun-noun compounds and their functional equivalents". Pepper identifies the function that *binomial constructions* serve from an onomasiological perspective (Štekauer 1998); binomial constructions are units that are used for the purpose of naming object concepts. In this usage, "naming" includes typifying constructions with an object modifier (such as English *glass bottle*, see Downing 1977) and more conventionalized labels that derive from typifying constructions (such as English *toothbrush*). As the list of examples in (4) suggests, this naming/sub-classifying function can be accomplished by a variety of morphosyntactic strategies, across languages:

(4) A range of formal strategies used for naming object concepts (Pepper 2020)
    (a) compounding: German *Eisen.bahn* [iron.track] 'railroad'
    (b) classifier: Murui Huitoto *ui.tïraï* [eye.CL(hair)] 'eyelash'
    (c) nominal derivation: Czech *pavuč.ina* [spider.NMLZ] 'spiderweb'
    (d) adjectival modification: Russian *želez.naja doroga* [iron.ADJZ road] 'railroad'
    (e) genitival modification: Bezhta *kil.os hino* [iron.GEN road] 'railroad'
    (f) adpositional modification: French *chemin de fer* [road PREP iron] 'railroad'

Binomial constructions name an object concept. However, the semantic relationship between nominal elements is not overtly specified; it is instead determined by the concept being named (ten Hacken 2021 calls this *onomasiological coercion*). This is in contrast to other types of constructions that also involve two words, such as an Adjective+Noun like *blue book* or a Noun+Deverbal.Noun like *truck driver*. An Adjective+Noun is a prototypical instance of property modification, narrowing the reference of the Noun without naming a distinct concept (Croft 2022, p104). A Noun+Deverbal.Noun, in contrast, names a distinct concept, but it does so with overt morphosyntax that determines the relationship between the elements: the agentive affix in *truck driver* specifies that the person drives the truck (Pepper 2020, p11).

As the semantic relation between object concepts is not overtly specified, there are a range of possible semantic relations that can be found in any compound. Summarizing the considerable previous literature on this topic, Pepper (2020) develops a semantic classification system for modifier-head relations found in binomial constructions, referred to as Hatcher-Bourque classification, after Hatcher (1960) and Bourque (2014). Hatcher-Bourque classification

[1] A reviewer correctly observes that this definition of *compound* excludes other constructions that contain two words, particularly "co-compounds" (or coordination constructions). An example of a (univerbated) coordination construction is ASL [parents], which descends from the former collocation [mother-father]. Though Wälchli (2005) uses the term "co-compound" for these coordination constructions, it is clear from the discussion on p90 that Wälchli considers these to be distinct from ("subordinate") compounds, constituting a separate type of construction. As stated in the text, I use *collocation* to refer to the larger, functionally heterogeneous class of units made from multiple words. Readers who wish to use the term "compound" to refer to a formal strategy, only, could refer to the functionalist prototype in this paper as either a *typifying compound* (following Croft 2022) or a *binomial compound* (following Pepper 2020).

identifies three high-level semantic relations (Similarity, Containment, and Causation) and 29 lower-level relations to capture possible relations between the modifier (M) and the semantic head (H) in a binomial construction. Several semantic relations are identified as the "reverse" of another relation. For example, English *songbird* is 'a *bird* that produces a *song*', where the modifier (*song*) is the product, and the head (*bird*) is the producer (a "production" relation). However English *birdsong* reverses this relation, as its modifier (*bird*) is the producer, and its head (*song*) is the product (a "production-reverse" relation). The list of semantic relations that Pepper identifies[2] for binomial constructions is provided as Table 2.

Table 2. A slightly simplified version of Pepper's (2020, p238) Hatcher-Bourque classification system, with English examples

High-level relation	**Lower-level relation**	**Semantic template**	**English example**
Similarity	taxonomy	M is a kind of H	oak tree
	taxonomy-reverse	H is a kind of M	bear cub
	coordination	H is also M	boy king
	similarity	H is similar to M	kidney bean
Containment	containment	H is contained in M	orange seed
	containment-reverse	H contains M	seed orange
	possession	H is possessed by M	family estate
	possession-reverse	H possesses M	career girl
	meronomy	H is part of M	car motor
	meronomy-reverse	H that M is part of	motor car
	location	H is at/near/in M	house music
	location-reverse	H that M is at/near/in	music hall
	temporality	H occurs during M	summer job
	temporality-reverse	H during which M occurs	golf season

[2] Semantic taxonomy is a challenging enterprise. It relies on subtle intuitions and is subject to matters of taste. For example, I am hard-pressed to intuit the difference between the semantic relation found in *seed orange* ('an orange that contains seeds'), and in *motor car* ('a car that a motor is part of'), from the English examples. As the distinction between "containment-reverse" and "meronomy-reverse" is subtle, it is reassuring to know that they are instances of the same high-level relation, "Containment", in the Hatcher-Bourque classification. For the most part, Pepper's Hatcher-Bourque classification presents an intuitive distillation of the literature on the nature of the relation between head and modifier in a binomial construction (see Pepper 2020, p221). Note also that Pepper's lower-level "coordination" relation corresponds to what is often referred to in the literature as "appositional compounds", as these are sometimes treated as a separate type of construction on the basis of their semantics (Wälchli 2005).

	composition	H made of M	sugar cube
	composition-reverse	M made of H	cube sugar
	topic	H is about M	history book
Causation	direction	H whose goal is M	sun worship
	direction-reverse	H is the goal of M	sales target
	source	H is the source of M	sugar cane
	source-reverse	H whose source is M	cane sugar
	causation	H causes M	tear gas
	causation-reverse	H is caused by M	sunburn
	production	H produces M	song bird
	production-reverse	H that M produces	birdsong
	usage	H that M uses	lamp oil
	usage-reverse	H uses M	oil lamp
	function	H serves as M	buffer state
	purpose	H is intended for M	animal doctor

Pepper (2020) applies both the classification of morphosyntactic strategies (some of which are given in 4) and the classification of semantic relations (Table 2) to a sample of 106 languages, to determine how often these strategies and relations are used to name a test set of 100 target object concepts. The overall frequency in Pepper's database suggests that the top five most common semantic relations found in binomial constructions are meronomy, purpose, coordination, location, and composition-reverse. Pepper also observes effects of the semantic fields involved; for example, the majority of the meronomy examples are body-part terms (such as Kalamang *kanggir nenen* [eye hair] 'eyelash'), and the majority of coordination examples involve age and/or gender (such as Ket *qīm.dūl* [woman.child] 'girl'). Pepper's statistical, typological results underscore the importance of describing binomial constructions in a way that is consistent across languages. This discussion should be framed in terms of the functions that these constructions serve, and in the range of formal strategies that are available, cross-linguistically, to accomplish these functions.

At this point, then, it is possible to define "compound" as a functionalist concept, in order to also use this term in the discussion of ASL compounds. Prototypical compounding constructions have the essential functional and formal characteristics listed in (5):

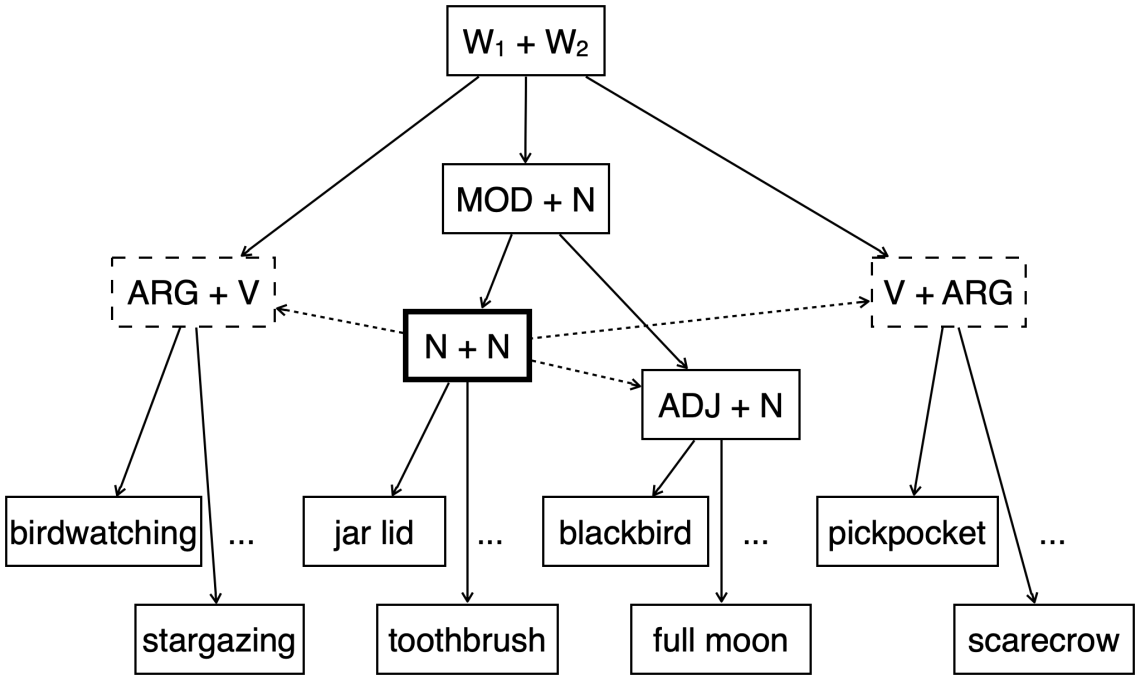
(5) A functionalist definition of *compound*:

I. Compounds are **naming units**; they are used for labeling and especially for sub-classification of object concepts (contrasting with other types reference)
II. Compounds involve **juxtaposition**; they contain two (or more) words, without additional formal elements (contrasting with other formal strategies involving affixes or adpositions)
III. Compounds are **modifier-head constructions**; one of the elements is the semantic head of the construction (contrasting with other strategies such as incorporation)
IV. Compounds are a type of **object modification**; there is an unstated semantic relation between two (or more) object words (contrasting with other types of modification)

These (partially overlapping) criteria establish typifying, noun-noun compounds as the center of a prototype category that can be examined in different languages. It is important to emphasize that this is a narrow definition for cross-linguistic comparison. It is oriented to function and excludes some structures that have been referred to as "compounds" in the literature (recall Footnote 1).

However, individual languages may also branch out from the cross-linguistic prototype in different ways. Langacker (2013, p239), for example, provides "a partial sketch of the network for English compounds". Langacker treats Noun+Noun ([N+N]) compounds as the prototype for this network, on the basis of their frequency and productivity in English, and analyzes other structural patterns that characterize less-prototypical compounds, such as *blackbird* and *pickpocket*, as extensions of the prototypical [N+N] pattern. A revised version of Langacker's diagram for this constructional network is shown in Figure 1.

Figure 1. An adaptation of Langacker's (2013) partial network of English compounds (solid arrows represent constructional instantiation, dashed arrows represent constructional extension, and dashed boxes indicate relative unproductivity of a constructional schema)



In this diagram, [N+N] compound is a constructional schema, a pairing of form and function (though the 'naming' function for this schema is not shown in the diagram). This schema is the prototype for a larger family of constructions in English. The [N+N] schema is instantiated by a range of actual compound forms, which include both typifying constructions (*jar lid*) and binomial constructions (*toothbrush*). English also has a number of [ADJ+N] compounds that, by virtue of being conventional labels, also are used for sub-classification (*full moon*) or as conventional object concept labels (*blackbird*). Because they have similar functions and structural properties, both the [N+N] prototype and the [ADJ+N] schema are analyzed as two instantiations of a more schematic [MOD+N] modifier-head construction.

The [N+N] compounding construction that Langacker treats as prototypical for English also matches the functionalist definition of compounding as a cross-linguistic prototype. Other English compounds, such as *pickpocket* and *birdwatching* (in which a verb and its argument have been incorporated into one unit), are non-prototypical. Like [ADJ+N] compounds, these constructions are analyzed as extensions from the [N+N] prototype, as they only exhibit a subset of the characteristics that define this construction. In English, these compounds are also considered non-prototypical because they are less productive than [N+N] compounds. Furthermore, verbal constructions like *stargazing* likely also instantiate (or derive from) other predication or modification constructions in English. Table 3 illustrates how these English examples align with the cross-linguistic definition of compound in (5); the fewer criteria that a construction meets, the further it deviates from the functionalist prototype.

Table 3. Classification of English constructions using the functionalist definition of compound

	naming unit	juxtaposition	modifier-head construction	object modification

jar lid	yes	yes	yes	yes
blackbird	yes	yes	yes	
pickpocket	yes	yes		
birdwatching	(yes)			

As the examples in Figure 1 also illustrate, (prototypical and non-prototypical) compounds vary in their individual level of conventionalization. Conventionalization is a continuous property, differing from compound to compound by degree. With increasing use in a language community, a compound will become increasingly widespread and recognized as the label for the concept it denotes (see Wilkinson 2016, Gagne 2017, Occhino et al. 2021).

Many conventional English compounds have metaphorical interpretations, such as *bookworm* 'a person who enjoys reading books (like a worm that eats books)'. As a compound becomes increasingly conventional and more widely used, it may be further extended and used in ways that deviate from its original modifier-head relationship. An example is English *ice cube*, which can be used to refer to small blocks of ice in a variety of shapes, beyond literal 'cubes'. A compound may also undergo some degree of phonological restructuring as a function of its use over time. A famous example is *cupboard*, which is pronounced "cubberd" (IPA: /ˈkʌb.ə͡d/) in contemporary spoken (American) English. However, neither semantic extension ("non-compositionality") nor phonological restructuring alone are necessary or sufficient for identifying compounds. Accordingly, they are not listed as aspects of the prototype definition in (5). This has consequences for the discussion of compounds in ASL.

<1> Distinguishing collocations and compounds

<2> On the recycling of ASL "compound" data

Lepic (2016) argues that the discussion of "ASL compounds" has been overly skewed toward the historical/phonological processes that affect sequences of signs, rather than the function and structure of compounding constructions, in particular. In part, this is because both generalizations about "ASL compounds" and specific examples of "ASL compounds" have been passed down without much modification since the 1970s. In particular, Klima and Bellugi's (1979) data provide the foundation for many generative phonological studies (e.g., Liddell and Johnson 1986; Sandler 1989), and are also repeated in reference materials such as textbooks (Valli et al. 2011, p59, 67; Hill et al. 2018, p37) and edited volume chapters (e.g., Meir 2012; Neidle and Nash 2015, p45). The result, as Vercellotti and Mortensen (2012, p547) note, is that "ASL researchers seem to have relied on the early work of Klima and Bellugi for their list of compounds, bothering neither to expand this empirical database, nor to verify Klima and Bellugi's claims" (Vercellotti and Mortensen's newer examples are discussed below).

Liddell (2003, p16) also notes that there is terminological inconsistency within ASL linguistics regarding the word *compound*: "because of the structural changes that take place as a result of compound formation, as well as historical changes subsequent to compound formation," Liddell

writes, "a typical ASL sign that came into being by the means of the compound formation rules is technically not a compound". As discussed above, this terminological confusion partially stems from the way that the label *compound* is used for the formal strategy of combining two words into one unit, without considering function. However, this terminological issue has also been compounded by the way that "compounds" were analyzed for their phonological properties in early ASL studies.

In order to disentangle these related senses of the word "compound", here I use the term *univerbation* to refer to the historical/structural changes that Liddell (2003) alludes to. Univerbation is the diachronic fusion and restructuring of words that are often used together into a single word form. In extreme cases, this restructuring can obscure the former, etymological structure of a word entirely. Such words no longer exhibit analyzable internal structure; they are single words. To refer to conventional phrasal units that consist of more than one analyzable word (regardless of the relation between them), I use the term *collocation*. *Compound*, as described above, is reserved for a particular constellation of formal and functional properties: (prototypical) compounds are constructions in which an object modifier sub-classifies a head noun. Finally, compounds can be distinguished from the process of *compounding*, or the productive process that is used in the creation of a novel compound.

<2> Collocations and univerbation

Collocations, groups of words that commonly appear together as units, have been discussed under a variety of labels in linguistics: these units are known as *chunks*, *prefabs*, *multi-word expressions*, *phrasemes*, and *formulaic language* (e.g., Jackendoff 1997; Erman and Warren 2000; Bybee 2001; Wray 2002; Shin and Nation 2008; Dąbrowska 2014). Collocations are conventional phrasal units that are shared, used, and re-used by the members of a language community. Some examples of collocations in English, broadly categorized according to the function of the phrasal unit, are given in (6):

(6) English collocation examples (Jackendoff 1997, p209-215; Erman and Warren 2000, p39-9)
  (a) Noun-like (used for reference)
    (i) *public education*
    (ii) *poached egg*
    (iii) *cashier's check*
    (iv) *open-heart surgery*
  (b) Adjective/Adverb-like (used for modification)
    (i) *honor bound*
    (ii) *off the top of my head*
    (iii) *out of date*
    (iv) *for some reason*
  (c) Verb-like (used for predication)
    (i) *butter him up*
    (ii) *knock yourself out*
    (iii) *get the hang of something*

(iv) fail to do something

(d) Discourse markers (used to link sections of discourse)

(i) I see

(ii) yes I think so

(iii) well you know

(iv) hold everything

Does ASL have collocations? It seems the answer is yes, although this topic has not been studied in much depth as such. Lepic (2019, p9) identifies the complex predicates [bring.in interpreter] 'get an interpreter' and [take.to hospital] 'be hospitalized' as two examples of conventional multi-word expressions in ASL. Similarly, Hou (2022, p21) identifies [1sg look oh.i.see] 'I was like, oh!' as an example of an ASL prefab that has become a discourse marker through its frequent use as a fixed complex predicate in ASL.

In addition, many "compounds" identified in the literature are actually examples of ASL collocations. Putting aside for the moment the question of which of these collocations, if any, are conventional in present-day ASL, Table 4 lists some examples from Klima and Bellugi (1979, p205). Judging from the English translations, many of these collocations are intended for complex predication, such as [food buy] 'grocery shopping', or modification, such as [good enough] 'just barely adequate'. The right-most column indicates which of these collocations seem to be used for reference, in anticipation of the discussion below.

Table 4. 9 collocations from Klima and Bellugi (1979)

Sign 1	**Sign 2**	**English translation**	**Noun-like?**
good	enough	just barely adequate	no
sure	work	seriously	no
wrong	happen	accidentally or by chance, fate	no
food	buy	grocery shopping	(yes)
sleep	sunrise	to oversleep	no
think	touch	keep thinking about	no
blue	spot	bruise	yes
face	new	stranger	yes
money	behind	money kept in reserve	yes

To this list of collocations, other examples from the literature can be added. Liddell and Johnson (1986) discuss the common collocations [good night] and [good idea], and Brentari (1993)

discusses examples like [think freeze] 'in shock' and [water rise] 'flooding'. None of these should be considered compounds, following the functionalist definition in (5), but to the extent that they are conventional multi-word units for ASL users, they can instead be considered ASL collocations of various types.

It is well known that established collocations undergo gradual univerbation, as a function of their use over time. In some cases, this process results in words that have completely lost their former etymological structure. For example, the contemporary English word *lady* comes from Old English *hlǽfdīge*, containing cognates of the contemporary words *loaf* and *knead* (https://www.oed.com/oed2/00128893). Though the internal structure of *lady* has now been completely obscured in contemporary English, it contains etymological remnants of a collocation that once meant 'bread kneader'.

Bybee (2001) has argued that, as they are used again and again, linguistic units become more automated and autonomous in linguistic knowledge, and they can also become more compressed and efficient, as a result. High-frequency collocations, in particular, undergo advanced levels of phonological reduction and univerbation. Bybee (2001, p60) identifies a number of collocation types in English that exemplify such frequency effects:

(7) High-frequency words/phrases (Bybee 2001, p60-1)
  (a) greetings and salutations (*what's up* > *tsup*)
  (b) contraction of auxiliary and pronominal subject (*I'll, I'm, we've*)
  (c) contraction of auxiliary and negation (*don't*, *can't*, *isn't*)
  (d) reduction of *don't* (in *I don't know*, *I don't care*)
  (e) fusion of *to* (in *want to* > *wanna*, *have to* > *hafta*, *going to* > *gonna*)

Do ASL collocations undergo univerbation? Here, the answer is certainly yes. Wilkinson (2013), for example, discusses the fused construction [think-self] 'it's up to you' as an example of a collocation that has been repackaged as a single sign functioning as a discourse marker. Wilkinson (2016) has similarly discussed frequency effects found in collocations with the negative particle [not] in ASL. The most frequent combinations in Wilkinson's database, [not have.to] 'don't have to', [why not], and [not understand], show more advanced degrees of phonological reduction, compared to less frequent collocations, such as [not teach]. Similar to Bybee and Scheibman's (1999) finding that English *don't* is more reduced in high-frequency collocations (*don't know*) compared to low-frequency collocations (*don't inhale*), Wilkinson's ASL data show that greater univerbation is found in more-frequent [not] collocations than in less-frequent collocations. From this perspective, the literature on phonological reduction in ASL "compounds" (e.g., Klima and Bellugi 1979, Liddell and Johnson 1986, Sandler 1989, Brentari 1993) can also be re-framed as identifying patterns of univerbation in ASL *collocations*.

Does ASL have examples like *lady*, which are advanced cases of univerbation of a former collocation? Again, the answer is yes. However, especially compared to English, etymological information for ASL is scarce. The ASL community does not share a conventional ASL writing system, and film technology has only become widespread for individual use in the past century

(Supalla and Clark 2014). However, Shaw and Delaporte's (2015) etymological dictionary describes some contemporary ASL signs that originated in longer sequences of signs (see also Delaporte and Shaw 2009, Shaw and Delaporte 2010). These signs include [because] and [why] (Shaw and Delaporte 2015, p23, 310), which were once signed with a form related to the contemporary ASL sign [for] sequentially with other elements. The etymological structure of these signs has long since been eroded; they are not transparent to contemporary ASL users. Frishberg (1975, p708) also describes the etymological structure of the contemporary ASL sign [tomato], which descends from an older collocation that combines the color sign [red] with a verbal sign meaning 'slice into a small round object'. However, the internal structure of this sign has largely been obscured for contemporary ASL users due to univerbation.

In some cases, the former structure of a collocation is reanalyzed as part of a morphological pattern. There are a handful of contemporary ASL signs that are negative predicates and are signed with a similar "twisting" movement pattern. Woodward and Desantis (1977) claim that these signs were once formed through the combination of a verbal sign and following negative particle (see also Zeshan 2004, 2006). However, these collocations have undergone univerbation that has obscured the negative particle. The result is a small paradigm of positive ASL forms (signs meaning 'good', 'know', 'like', 'want') and corresponding negative forms (signs meaning 'bad', 'don't know', 'don't like', 'don't want') which are all formed with a change in movement. As a result, these signs are no longer considered collocations, but rather as examples of a non-productive, movement-based morphological pattern in contemporary ASL.

<1> ASL compounds and compounding

<2> (Prototypical) compounds in ASL

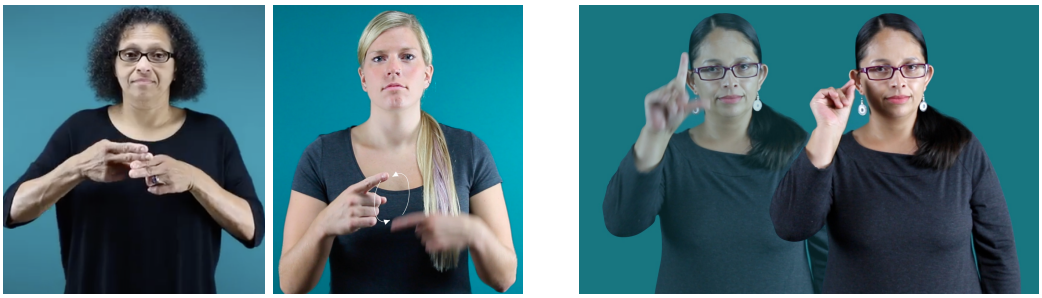
The previous sections define prototypical compounds as constructions in which an object modifier sub-classifies a head noun. Compounds are a sub-type of collocation, which are the various conventional multi-word units shared by users of a language. From this functionalist perspective, few of the constructions that have been identified as "compounds" in the ASL literature can be considered prototypical compounds in a cross-linguistic sense.

ASL collocations that can be considered prototypical compounds have been identified in the literature, however. Bellugi and Newkirk (1981, p29) discuss the (invented) compound [letter number] 'zip code', and Sandler and Lillo-Martin (2006) discuss the (recursive) compound [[deaf school] class]. Lepic (2016) also identifies a handful of prototypical compounds, including [name sign], [school system], and [number story] 'a signed story using only number handshapes'.

What is the basis for calling these collocations prototypical compounds? First, a construction like [name sign] is a naming unit. It refers to a subset of [sign], that is, ASL signs that are used to refer to individuals and institutions. The sign [gallaudet], for example, is a name sign that refers to Gallaudet University (Figure 2). The ASL construction [name sign] contains two signs in a modifier-head relationship, and both the modifier and the head are object concept signs. A [name] is not a physical object, but it is an autonomous, stative concept that is conceptualized as a single entity. Similarly, a [sign] is a word, it is a form-meaning pairing that is also

conceptualized as an autonomous, stable concept. Because [name sign] meets all of the criteria outlined in (5) above, it can be considered a prototypical compound in a cross-linguistic sense.

Figure 2. The ASL compound [name sign], and one example of an ASL name sign: [gallaudet] (ASL Signbank 2023)



An example like ASL [formal room] 'living room', which Lepic (2016) identifies as a compound, is better classified as a type of non-prototypical compound, at least in a functionalist sense. This construction is also a naming unit, it sub-classifies a type of [room] in ASL. However, ASL [formal] is a property concept sign. Like English *full moon*, the modifier in this ASL construction is an Adjective/property word. Aside from this difference, [formal room] exhibits the remaining properties of a prototypical compound, it conventionally names and sub-classifies an object concept.

Figure 3. The less-prototypical compound [formal room] 'living room'; this construction exhibits all of the properties of a prototypical compound, except that the modifier is a property concept word (ASL Signbank 2023)

Recall from Figure 1 that, in English, at least, both [N+N] and [ADJ+N] constructions can be grouped together as [MOD+N] constructions: both are used for naming/sub-classification, as two-sign units. However, it is helpful to be able to distinguish [N+N] compounds and [ADJ+N] compounds, because of the nature of the semantic relation between the elements of the construction. In a [N+N] compound, there is an unstated semantic relation between two object concepts that is determined by the concept being named (recall Table 2). In an [ADJ+N] compound, the Adjective/property word directly modifies the head Noun, even as the entire unit names a subcategory of that Noun. A prototype-based approach allows linguists to isolate these properties that differ between constructions, within and across languages. Table 5 shows how this approach distinguishes the ASL constructions [name sign] and [formal room].

Table 5. Classification of ASL constructions using the functionalist definition of compound

	naming unit	juxtaposition	modifier-head construction	object modification
[name sign]	yes	yes	yes	yes
[formal room] 'living room'	yes	yes	yes	

The functionalist definition relies on the linguist's ability to distinguish action, object, and property concept words, and to identify when concepts are formally coded as participating in various (non-prototypical) propositional acts in the target language. For example, the English collocation *birdwatching* does not name an object concept, but rather it names an action that can be used in referential constructions as an *action nominal*. English codes this distinction with the gerund verb form *-ing*; English *watch* is an action concept, but it can be packaged as a referential construction through morphosyntactic coding. In this case, the *bird* of *birdwatching* is an argument of the verb *watch* rather than an object modifier.

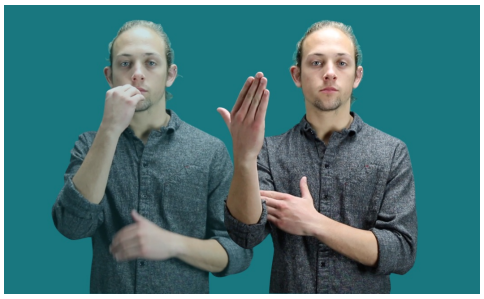
Two prior ASL studies discuss movement patterns that can be used to identify action concept signs that are used in referential constructions, on the basis of the movement of the sign. Supalla and Newport (1978, p108) identify several pairs of related action and object signs that differ only in the overall quality of their movement. Many action concept signs in ASL, like [sit], [hammer], and [sweep], are signed with longer, continuous movements, while ASL signs that refer to related object concepts, like [chair], [hammer], and [broom], are often signed with constrained, repeated movements. Padden and Perlmutter (1987, p343) also identify a movement pattern that signals when action concept signs are being used as action nominals in ASL: in pairs of signs like [write] and [writing], [read] and [reading], and [act] and [acting], the action signs are (again) signed with longer, continuous movements, while the corresponding action nominal signs are formed with "trilled", or comparatively smaller and tenser repeated movements.

ASL often uses movement-based rather than segmental/concatenative morphology for distinguishing word classes. These movement differences may be most salient in a careful citation form, but in connected signing, they can be obscured. For example, in a citation form, the ASL Noun [night] is signed with the dominant hand contacting the non-dominant hand twice. However, as Liddell and Johnson (1986, p461) have shown, in the collocation [good night], the repeated movement of [night] is simplified to a single movement. Moreover, ASL signs exhibit rich polysemy, and it often happens that action concept words are used for reference or object concept words are used for modification, without much identifiable formal coding (Loos 2022, see also Dudis 2004, Villanueva 2013). These structural facts present some small challenges for morphosyntactic analysis of compounds in ASL.

This question of how to identify morphosyntactic coding matters for the analysis of an ASL collocation like [eat-morning] 'breakfast'. This sign names an object concept, however, it exhibits

ambiguous internal structure. The same basic ASL form, a "bundle" handshape moving toward the mouth, is used when signing the action concept [eat], the related object concept [food], and the action nominal [eating]. In a careful citation form, these morphologically-related signs might be distinguished by their movement patterns. However, in the collocation [eat-morning], any movement distinction has been obscured due to univerbation. This raises the question: should the collocation [eat-morning] be analyzed as having the structure 'food morning' [N+N] (putting aside for the moment that this would be a head-initial structure), or 'eat in the morning' [V+MOD] (Figure 4)?

Figure 4. The collocation [eat-morning] 'breakfast' names an object concept using two signs, however it also undergone univerbation and exhibits ambiguous internal structure (ASL Signbank 2023)



Of course, this ambiguity is of theoretical rather than practical interest. This ASL sign has a highly conventionalized meaning, 'breakfast; the meal eaten in the morning'. ASL signers use this conventional sign without parsing its structure, just as English users use the word *breakfast* without parsing its etymological structure (i.e., the archaic structure 'break one's fast'). If pressed to analyze this sign, some ASL users might categorize [breakfast] as having a more object-oriented structure ([food-morning]), rather than an action-oriented structure ([eat-morning]). Conservatively, this sign is a collocation that has undergone some degree of univerbation, and exhibits ambiguity stemming from the fact that the object concept word [food] in ASL is very closely related to (and likely derived from) the action concept word [eat]. These construction-specific properties render it less than ideal as an example of a prototypical compound (and see below for further discussion of headedness in ASL collocations).

This discussion of the ASL sign [breakfast] also relates to one of Klima and Bellugi's (1979) examples, the collocation [food buying] 'grocery shopping' (recall Table 4 above). Here again, the element glossed "FOOD" is ambiguous. Moreover, in this sign, the second element is formed with the trilled, repeated movement that characterizes action nominals in ASL; Klima and Bellugi (1979, p205) gloss it "BUY[+]". Parallel to English formations such as *birdwatching*, the ASL collocation [food buying] seems to name an argument+verb that can be used in a referential construction as an action nominal. Table 6 analyzes the ASL collocations [eat-morning] and [food buying] according to the proposed criteria for prototypical compounds. Neither construction seems to be a good match for a prototypical compound, and [food buying] in particular seems better classified as some other kind of action nominal construction in ASL.

Table 6. Classification of ASL constructions using the functionalist definition of compound

	naming unit	juxtaposition	modifier-head construction	object modification
[eat-morning] 'breakfast'	yes	yes (but undergoing univerbation)	?	?
[food buying] 'grocery shopping'	(yes)			

Again, the prototype definition of compound in (5) characterizes constructions in terms of their function and their form, following Croft (2022) and Pepper (2020). This approach begins from the assumption that there is not a 1:1 mapping between function and form, within and across languages. Instead, many types of constructions are used for naming, and many types of constructions combine two words into a single unit. Prototypical compounds are a specific intersection of these functional and formal properties that can be examined across languages.

Another previous study of ASL compounds, Vercellotti and Mortensen (2012), follows Scalise and Bisetto's (2009) compound classification system (and see Santoro 2018, for application of this framework to Italian Sign Language and French Sign Language). This classification system includes several construction types that the present analysis would consider non-prototypical compounds or as having a different functional profile altogether. These include verbal-incorporation constructions (structures like English *bookseller* and *pickpocket*) and coordination constructions (like *father-daughter*, which, in English at least, are often used for modification: *father-daughter dance*). The constructions that Scalise and Bisetto (2009) identify exhibit a range of heterogeneous functions, but all can be considered collocations of some kind.

Working with examples collected from an ASL dictionary (Costello 1994) and reviewed with ASL consultants, Vercellotti and Mortensen (2012, p559) classify 125 ASL collocations using the Scalise and Bisetto system. Among their examples, there are a number of collocations which have undergone significant univerbation (such as [boy-baby] 'son' and [think-self] 'up to you'), some of which have undergone such extensive restructuring that they do not exhibit much analyzable internal structure, if any at all (such as [breakfast], [tomato], and [home]). Also among Vercellotti and Mortensen's examples, there are several prototypical compounds; 10 are listed in Table 7 with the corresponding semantic relation from the Pepper's (2020) Hatcher-Bourque classification (recall Table 2).

Table 7. 10 prototypical compounds from Vercellotti and Mortensen (2012)'s 125 collocation examples, with semantic relations from Pepper (2020)

Sign 1 (modifier)	**Sign 2 (head)**	**English translation**	**Hatcher-Bourque classification**
medicine	store	pharmacy	**location-reverse** (a store that

			medicine is in) = **Containment**
jesus	book	bible	**topic** (a book that is about Jesus) = **Containment**
bed	room	bedroom	**meronomy-reverse** (a room that a bed is part of) = **Containment**
peanut	butter	peanut butter	**composition-reverse** (butter composed of peanuts) = **Containment**
toilet	paper	toilet paper	**direction** (paper whose goal is a toilet) = **Causation**
bird	meat	poultry	**source-reverse** (meat whose source is a bird) = **Causation**
sign	language	sign language	**usage-reverse** (a language that uses signs) = **Causation**
music	group	band	**production** (a group that produces music) = **Causation**
animal	doctor	veterinarian	**purpose** (a doctor that is intended for animals) = **Causation**
rain	coat	rain coat	**purpose** (a coat that is intended for rain) = **Causation**

As Table 7 only lists examples of the Containment and Causation relations, it is worth asking whether any examples of Pepper's third high-level type, Similarity, are found in Vercellotti and Mortensen's data. Pepper's Similarity category contains four lower-level relations: taxonomy (English *oak tree* 'an oak is a kind of tree'), taxonomy-reverse (*bear cub* 'a cub is a kind of bear'), coordination (*boy king* 'a king that is also a boy'), and similarity (*kidney bean* 'a bean that is similar to a kidney'). Pepper (2020, p241) finds that the majority of coordination examples in his database involve age and/or gender, and this seems to be the case for ASL, as well. Vercellotti and Mortensen (2012) provide [girl scout], [boy scout], and [baby dog] 'puppy', which exhibit a coordination relation and relate to age/gender. The ASL signs [boy-baby] 'son' and [girl-baby] 'daughter' also fall into this category, though they have also undergone more significant univerbation that obscures their etymological structure in contemporary ASL, making them more like single signs than structured compounds.

<2> Other compounding and collocation constructions in ASL

It is clear that ASL has examples of compounds which can be considered prototypical from a comparative perspective. These are units like [name sign], in which an object modifier sub-classifies a head noun. Though [N+N] compounds can be considered prototypical from a cross-linguistic perspective, it is also important to consider whether this type of compound is

prototypical for ASL. Are other formal strategies used more often for naming/sub-classification? Is the morphosyntactic strategy of collocation used for a wider variety of functions than naming? This section addresses some of these questions by considering a broader range of constructions in ASL. However, an in-depth, quantitative assessment of compound productivity and frequency in ASL will have to wait until more suitable reference materials for ASL are available (Lepic 2016, Börstell 2022, Hochgesang et al. 2023).

Recall that Table 5 above compares the prototypical compound [name sign] with the less-prototypical compound [formal room] 'living room'. These two constructions are closely related, differing in the semantic relation between the modifier and head; object modifiers exhibit a greater range of possible semantic relations than property modifiers do. However, in English, there are several conventional compounds which have color words, other property words, or denominal adjectives functioning as the modifier that sub-classifies a head noun (Table 8).

Table 8. Some examples of [ADJ+N] compounds in English

'color'+N	**ADJ+N**	**$_{N}$ADJ+N**
greenhouse	*hot dog*	*linguistic competence* (cf. *language ability*)
red flag	*smartphone*	*historical fiction* (cf. *history museum*)
blueberry	*high school*	*atomic energy* (cf. *atom theory*)

For English compounds, there has been quite a lot of discussion of the relationship between phonetic realization and morphosyntactic structure, especially in the last few decades, when studies have been increasingly informed by corpora and experimental data (e.g., Plag et al. 2008, Bell et al. 2020). For present purposes, it is sufficient to state that these types of structures are considered compounds rather than modifying constructions in English, because the phrasal unit has a clear naming function. The English compound *hot dog*, for example, does not describe a 'warm animal', but rather through a process of semantic extension and conventionalization, *hot dog* has become the label that names a particular food in English.

Are [ADJ+N] compounds also common in ASL? Loos (2022) suggests that the class of dedicated property concept words in ASL relates primarily to dimension, age, value, and color words (see also Dixon 1977, Bergman 1983, and Dixon and Aikhenvald 2004). ASL also does not have (many) morphosyntactic paradigms that are used to distinguish Adjectives as a class from other prenominal modifier constructions. These facts suggest that [ADJ+N] compounds will not be commonly found in ASL, and that other types of signs might be used as prenominal modifiers, as well.

In addition to the example [formal room] 'living room', some potential examples of sub-classificatory constructions formed with property words include those in Table 9, collected from Klima and Bellugi (1979) and Vercellotti and Mortensen (2012). Like the [ADJ+N]

compound [formal room], these constructions are two-sign units that sub-classify the head Noun by narrowing its reference, e.g., a [blue berry] names a specific variety of 'berry'.

Table 9. 5 examples of [ADJ+N] compounds in ASL from previous literature

Sign 1 (modifier)	**Sign 2 (head)**	**Meaning in English**	**Source**
blue	spot	bruise	K&B-79
false	father	step-father	V&M-12
false	mother	step-mother	V&M-12
short	name	nickname	V&M-12
blue	berry	blueberry	V&M-12

Also among the examples from the previous literature, there are instances of compounds in which an initial action word sub-classifies the head Noun (see Mathur and Rathmann 2012). Lepic (2016) for example, gives [call center] 'call center', with the action sign [call] naming a kind of 'center' (Table 10). It seems likely that the [V+N] structure in ASL is motivated by the way that many ASL signs can be used in predication or modification constructions (Loos 2022). It may also be that this structure is influenced by the way that many *English* constructions use the same words for reference and predication (e.g., *call* can be used as a Noun or Verb in English). However, this issue cannot be addressed without additional targeted research. For now, it suffices to note that the [V+N] pattern may be more productive than the [ADJ+N] pattern, pending further research.

Table 10. 6 examples of [V+N] compounds in ASL from previous literature

Sign 1 (modifier)	**Sign 2 (head)**	**Meaning in English**	**Source**
dance	room	ballroom	V&M-12
invent	story	fairy tale	V&M-12
sleep	dress	nightgown or pajamas	K&B-79
agree	form	consent form	Lepic 2016
call	center	call center	Lepic 2016
exercise	program	exercise program	Lepic 2016

Aside from the problematic example [breakfast], the ASL compounds discussed so far all have a [MOD+N] structure, with the modifier coming before the semantic head. However, the [N+ADJ]

construction [bed soft] 'pillow or mattress' is identified by both Klima and Bellugi (1979) and Vercellotti and Mortensen (2012). This construction is head-initial; a [bed soft] 'mattress' is a kind of 'bed'. Pepper (2020, p180), among others, notes that from a cross-linguistic perspective, languages often vary with respect to their overall patterns of headedness. So, the order of modifier and head should not determine whether the overall structure is considered a compound, on its own. Moreover, Pepper (2020, p261) finds that in some languages, headedness correlates with information such as the type of semantic relation being coded or the type of morphosyntactic strategy being used.

Loos (2022) suggests, however, that post-nominal modifiers in ASL can generally be analyzed as some other type of structure, such as a reduced relative clause. It seems that the head-initial structure in ASL encompasses a wide variety of sub-constructions in which the following element describes the initial head noun. These constructions will only be mentioned briefly here. From Klima and Bellugi's (1979) and Vercellotti and Mortensen's (2012) examples, the post-nominal elements in these constructions instantiate a range of relational signs, whether Verb-like (the action sign [copy]), Preposition-like (the spatial sign [behind]), or Adjective-like (property signs like [soft] and depicting signs that show the shape of the referent, generally meaning 'shaped like this'; see Bergman and Wallin 2003, Tkachman and Meir 2018, Nyst 2019, McKee et al 2021). These constructions are analyzed here as having a post-nominal relation structure, [N+REL], as in Table 11.

Table 11. 5 [N+REL] constructions from previous literature, with an English translation and paraphrase of the relation between both signs

Sign 1 (head)	**Sign 2 (relation)**	**English translation**	**English paraphrase**
machine	copy	'xerox machine' K&B-79	a machine that copies
light	blink	'alarm clock' K&B-79	a light that blinks repeatedly
bed	soft	'pillow or mattress' K&B-79, V&M-12	a (part of a) bed that is soft
money	behind	'money kept in reserve' K&B-79	money that is held back
letter	rectangular	'envelope or postcard' K&B-79, V&M-12	a letter that is shaped like this (rectangular)

In addition, a number of relation-final collocations in the literature do not contain a semantic head. This is because these collocations either name a different referent object concept through a process such as metonymy (as in the example [family pass.down] 'heirloom; an item that is passed down within a family'), or because they can be analyzed as predication constructions rather than referential constructions. Table 12 provides some examples. In the literature, these

types of constructions are referred to as "exocentric compounds". Until these ASL constructions can be analyzed systematically for their functions, I categorize them as relational collocations.

Table 12. 6 [X+REL] collocations from previous literature which do not involve sub-classification of a head noun, and instead name a different concept

Sign 1	**Sign 2 (relation)**	**English translation**	**English paraphrase**
family	pass.down	'heirloom' V&M-12	'an item that is passed down within a family' (*not* a type of family)
heart	hit.barrier	'heart attack' V&M-12	'a sudden event during which the heart is damaged from clogging' (*not* a type of heart)
money	exchange	'bank teller or budget' K&B-79	'a place where money is handled' (*not* a type of money)
nose	opposite	'allergy or allergic' V&M-12	'an immune response caused by the body(/nose)'s sensitivity to a substance' (*not* a type of nose)
money	give	'to tip' V&M-12	'to give money after a service' (a predication construction)
sleep	sunrise	'to oversleep' K&B-79, V&M-12	'to sleep until after the sun has risen' (a predication construction)

As argued above, from a functionalist perspective it is preferable to define constructions in terms of their function and their form. Here, *compounds* are structures in which an (object) modifier sub-classifies a head noun, and a term like *collocation* can be used to describe conventional multi-word units more generally. Beyond determining which label to use, the prototype definition of compound allows for precise classification of these various construction types. As a summary of this section, Table 13 provides a list of constructions that can be considered either prototypical or somewhat less-prototypical compounds, in a cross-linguistic sense.

Table 13. ASL compounds, constructions in which a modifier sub-classifies a head noun

	naming unit	juxtaposition	modifier-head construction	object modification
[sign name]	yes	yes	yes	yes
[jesus book] 'bible'	yes	yes	yes	yes
[formal room]	yes	yes	yes	

'living room'				
[dance room] 'ballroom'	yes	yes	yes	
[money behind] 'money kept in reserve'	yes	yes	(yes, but head-modifier)	
[letter rectangular] 'envelope or postcard'	yes	yes	(yes, but head-modifier)	

In contrast, the constructions in Table 14 exhibit fewer of the properties that define compounds. These are formed from two signs, but they either lack a semantic head, or they have additional morphological coding as action nominals, or they label a different kind of concept such as a complex predicate. New examples introduced in this table (again from Klima and Bellugi 1979 and Vercellotti and Mortensen 2012) include [mother-father] 'parents', a univerbated structure which names an object concept but does not derive from a modifier-head structure, and [body burning] 'cremation', which Klima and Bellugi (1979, p205) also describe as being made with the additional trilled movement typical of action nominals.

Table 14. ASL collocations, constructions which contain two signs but exhibit few other properties that define prototypical compounds

	naming unit	juxtaposition	modifier-head construction	object modification
[good night]		yes	yes	
[good idea]		yes	yes	
[money exchange] 'bank teller or budget'	yes	yes		
[mother-father] 'parents'	yes	yes		
[food buying] 'grocery shopping'	(yes)			
[body burning] 'cremation'	(yes)			
[sleep sunrise] 'to oversleep'		yes		

[think drop] 'to faint'		yes		

This discussion of collocations in ASL has primarily been informed by data reported in two previous studies, Klima and Bellugi (1979) and Vercellotti and Mortensen (2012). However, Lepic (2016) argues that in order to understand compounding as a productive process in ASL, it is necessary to include other sources of data beyond dictionaries and vocabulary lists (cf. Downing 1977). Such data could be collected from structured elicitation sessions designed to capture creative language in use, or corpus-based studies that quantify how particular constructions are used in naturalistic discourse. In the meantime, the theoretical argument of this paper is that not all combinations of two signs should be considered compounds. Instead, it is beneficial to describe various collocation types in terms of their shared aspects of function and form.

<1> Conclusion

This paper has adopted Croft's (2022) functionalist approach to morphosyntactic analysis in order to establish criteria that can be used to identify compounds in ASL. Following Pepper (2020), I have argued that from a functionalist perspective, the label *compound* should be reserved for constructions that exhibit specific functional and formal properties. These overlapping properties are repeated in (8); compounds are constructions in which an object modifier sub-classifies a head noun.

(8) A functionalist definition of *compound*:

I. Compounds are **naming units**; they are used for labeling and especially for sub-classification of object concepts
II. Compounds involve **juxtaposition**; they contain two (or more) words, without additional formal elements
III. Compounds are **modifier-head constructions**; one of the elements is the semantic head of the construction
IV. Compounds are a type of **object modification**; there is an unstated semantic relation between two (or more) object words

This prototype definition provides a new lens for analyzing constructions that have previously been identified as "compounds" in the ASL literature. I have suggested that the term *collocation* can be used to refer to conventional units containing multiple signs. With frequent use, many collocations (including compounds) may undergo *univerbation*, the structural repackaging of phonological material into a single sign form. Future research can examine both the range of functions that different types of collocations perform in ASL, and the ways that frequency of use drives the univerbation of these varied collocations.

Looking at collocations from the literature, I have demonstrated that there are a number of compounds that fit the cross-linguistic [N+N] prototype, including ASL [name sign] and [peanut butter]. ASL also has [ADJ+N] compounds, such as [formal room] 'living room' and [short name]

'nickname', and [V+N] compounds, such as [invent story] 'fairy tale' and [exercise program]. These "less-prototypical" compounds deviate from the cross-linguistic prototype only in that they lack an object concept modifier. It remains to be seen which structures are used most commonly and productively in ASL discourse, and could accordingly be considered the prototype for this category, within ASL.

Along the way, a variety of other ASL structures have been discussed which also require further research. These include head-initial naming structures and predication constructions that contain multiple elements. The argument of this paper is that these structures increasingly deviate from the criteria that define prototypical compounds. This raises the question of how to analyze the morphosyntactic properties of these constructions, and what to call them. Answering this question will again require that linguists identify the range of functions that these structures perform, as well as the variety of formal strategies that are used to mark these functions. This future research will allow for a fuller understanding of the variety of ASL collocations, including and beyond compounds.

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