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Verb-verb compounds: Delimiting the concept and approaching the study of ordering principles

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Abstract. This study is devoted to verb-verb compounds or monoclausal complex predicates with two or more verbal stems integrated in a single grammatical word. I critically assess earlier approaches to these constructions in terms of their relations to serial verb constructions, a broader family of monoclausal complex predicates. First, I provide a framework to analyze verb-verb compounds and a comparative concept for cross-linguistic study of these structures. Second, based on a small cross-linguistic sample of 12 languages from 6 macro-areas, I present a pilot study of Head-Modifier relations and their ordering principles in three semantic types of these constructions: Manner-of-Motion, Directional and Mental Process Constructions. The findings show that there is no single principle for deriving the component ordering of stems in verb-verb compounds: in Mental Process Verb-Verb Compound Constructions, the ordering follows the general principles of Head-Modifier ordering standard for the morphology and syntax of a given language, while the ordering in Manner-of-Motion and Directional Verb-Verb Compound Constructions the Path Verb is heavily attracted to the position in the end of compound sequence, for which I provide provisional cognitive and diachronic explanations. Different principles governing the Head-Modifier ordering in different types of verb-verb compounds suggest that these compounds do not represent a universal framework. Moreover, a comparison with the principles formulated for Head-Modifier ordering in serial verb constructions in earlier studies suggests a functional affinity of some types of verb-verb compounds and some types of serial verb constructions with less close-knit components.

Keywords: verb-verb compounds, serial verb constructions, heads and modifiers, motion verbs, compounds, incorporation.

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Глагольно-глагольные компаунды: границы понятия и пилотное исследование порядка компонентов

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Аннотация. Исследование посвящено глагольно-глагольным компаундам, а именно моноклаузальным сложным предикатам, в которых две или более основ глагола объединены в пределах морфосинтаксического слова. В статье приводится обзор предыдущих подходов к схожим конструкциям, а также рассматривается отношение между глагольно-глагольными компаундами с сериальными глагольными конструкциями. На основании предложенного сравнительного понятия я провёл пилотное типологическое исследование принципов, влияющих на порядок компонентов в глагольно-глагольных компаундах. На материале небольшой типологической выборки (12 языков из 6 макроареалов) удалось показать, что порядок компонентов в конструкциях с глаголами перемещения не зависит от линеаризации вершин и зависимых в морфологии и синтаксисе языка, в то время как порядок компонентов в компаундах с глаголами ментальной активности гармонирует с порядком вершины и зависимого в других конструкциях. В конструкциях с глаголами перемещения порядок компонентов в свою очередь определяется тенденцией глагола перемещения занимать последнюю позицию. Принципы, влияющие на порядок компонентов в рассмотренных типах компаундов, схожи с принципами, влияющими на порядок глаголов в менее тесно связанных сериальных глагольных конструкциях.

Ключевые слова: глагольно-глагольные компаунды, сериальные глагольные конструкции, вершины и зависимые, глаголы перемещения, инкорпорация.

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1. Verb-verb compounds: Comparative concept and a relation to serial verb constructions

In this paper I discuss verb-verb compounds (hereafter, VVCs, see (3), (4) below), a subtype of Serial Verb Constructions (hereafter, SVCs, see (i)–(iii) below), in which two verbal stems form a close-knit unity treated as a single grammatical word. The study has two aims. In terms of methodology, it offers some principles for formulation of comparative concepts needed to study VVCs in light of other types of SVCs and complex predicates. The second aim is to study the ordering principles in the three subtypes of VVCs using the framework distinguishing VVCs on semantic basis. For this purpose, I undertake a pilot study based on a small sample of 12 languages from 6 macro-areas.

The paper is structured as follows. *Section 1* is devoted to the problem of distinguishing VVCs from other SVCs; this section also lists the comparative concepts I use and provides a general outline of the pilot study. *Section 1.2* specifically addresses the problematic question of single-wordhood of a construction and its elements' verbhood, while *Section 1.3* addresses the notion of headedness in SVCs and VVCs. *Section 1.4* presents the language sample used in this pilot study. *Section 2*

discusses the semantic types of VVCs addressed: Manner-of-Motion (*Section 2.1*), Directional (*Section 2.2*), and Mental Process (*Section 2.3*) constructions. In *Section 3*, I discuss the component order in the constructions under study and propose some principles which may lie behind their ordering patterns. I summarize my findings and suggest? a further discussion in *Section 4*.

A serial verb construction, illustrated in (1), (2) below, is a construction with two verbal elements functioning as a single predicate:

Eastern Kayah, Sino-Tibetan family

(1) *ʔa* ***dɛ*** ***thɛ*** *dɤ́* *plò* *kū* *dɤ́* *phrɛ̀* *khu*
3 put go.up at:U box in at:U shelf on
'They put it (up) in a box on a shelf' [Solnit 1997: 73].

Hoan, Kxa family (Africa)

(2) *ǀma* ***ǁkŏe*** ***na*** *ka* *ǁhoam-ǁhoam* *ča*
1SG still ITIN SUB jog come
'While I still was coming jogging' [Collins, Gruber 2014: 169].

Serial verb constructions (SVCs) have received much attention in the last forty years. Although SVCs were initially described and analyzed for certain African [Stewart 1963] and East Asian [Li, Thompson 1973] languages with little or no morphology, cross-linguistic studies of SVCs in typologically-diverse languages followed these as well; see [Foley, Olson 1985; Durie 1997; Aikhenvald, Dixon 2006]. These studies acknowledged the existence of SVCs as a family of constructions with multiple variation parameters and subtypes. Among others, the latter feature verb-verb compounds, i.e. constructions in which two verbal stems both function as a single clause and form a single verbal word, see [Foley, Olson 1985; Durie 1997]. Consider examples of verb-verb compound constructions in (3)–(4):

Chukchi, Chukotko-Kamchatkan family

(3) *tə-kəławə-pker-ɣʔa-k* *ramaj-etə*
1SG.S/A-run.slowly-arrive-TH-1SG.S village-DAT
'I came to the village (e.g. from tundra) running slowly' (personal fieldnotes).

Saliba, Austronesian family

(4) *ye-tu-dobi-ei-*Ø
3sg-throw-go.down-app-3sg.o
'He threw it down' [Margetts 1999: 126].

There exist two main definitions of serial verb constructions: an inclusive, prototype-based definition proposed in [Durie 1997: 289–292], summarized in [Aikhenvald, Dixon 2006] and presented in (i) below; and a restrictive comparative concept proposed in [Haspelmath 2016] and cited in (ii). For the comparative concept notion, see [Haspelmath 2010] among others.

(i) "S*erial verb construction is a sequence of verbs which act together as a single predicate, without any marker of coordination, subordination or syntactic dependency of any other sort*" [Aikhenvald, Dixon 2006: 1].

(ii) "*A serial verb construction is a monoclausal construction consisting of multiple independent verbs with no elements linking them and with no predicate-argument relation between the verbs*" [Haspelmath 2016].

Under both approaches, the wordhood of SVC[1] components is viewed as a parameter of variation between languages or between constructions within a single language. Hence, VVCs are treated as a subtype of contiguous SVCs in which two verbal components constitute a single wordform, see [Aikhenvald 2006a]. Consider examples (5), (6) from two closely-related Gunwinyguan languages: Dalabon and Bininj Gun-Wok (Kune dialect). In the Kune dialect of Bininj Gun-Wok, the combination of Manner and Motion verbs is expressed via a contiguous SVC (5), while in Dalabon a VVC is used in the same function (6), see [Evans 2003: 547].

[1] Haspelmath [2016] does not view the degree of phonological and morphosyntactic boundedness between the components of SVCs as an important typological parameter because of the current lack of universally applicable criterion for wordhood, see [Haspelmath 2011].

Kune dialect of Bininj Kun-Wok (Gunwinyguan, Australia)

(5) *kun-dulk* *nakkanj* *ka-warme* *ka-re*
IV-stick that 3-float.NP 3-go.NP
'A stick is floating along (down the river)' [Evans 2003: 659].

Dalabon (Gunwinyguan, Australia)

(6) *dulh* *djakih* *kah-warme-ye-bo-n*
stick that 3-float-IVF-go-PR
'A stick is floating along (down the river)' [Evans 2003: 547].

The functional similarity between VVCs and multi-word SVCs, illustrated for two closely related languages in (5) and (6), was also highlighted for some other languages: e.g., for Yimas (Lower Sepik-Ramu family, Papunesia), see [Foley, Olson 1985], or for Alamblak (Sepik family, Papua area) and Igbo (Niger-Congo, Africa), see [Durie 1997]. Moreover, multi-verb SVCs were demonstrated to be a diachronic source of VVCs for some languages, see [Aikhenvald 1999] for Tariana (Arawak family, South America).

In my study, I also treat VVCs as a subtype of SVCs. However, I propose my own comparative concept for SVCs (v) and VVCs (i) which combines definitions from [Haspelmath 2016] with insights from [Aikhenvald, Dixon 2006]:

(iii) my definition of the SVC:
A serial verb construction is a monoclausal construction consisting of multiple verbs with no marker of coordination or subordination between them.

(iv) my definition of the VVC:
A verb-verb compound construction is a serial verb construction whose elements can be separated only by non-word-class-changing derivational elements.

In the following subsections, I provide a more detailed discussion of the features differentiating VVCs from other SVCs (*Section 1.1*) and of the types of VVC components (Heads and Modifiers, *Section 1.2*).

1.1. Serial verb constructions and verb-verb compounds: A problem of verbhood and single-wordhood

To study verbal compounds separately from other types of SVCs, I need a universally applicable criterion for wordhood. Unfortunately, the existing studies on compounding assume that there is no universal way to differentiate between compounds and phrases: the phonological, morphosyntactic and semantic criteria proposed are often language-specific and do not converge even within a single language (e.g., see [Lieber, Štekauer 2009]. Moreover, typologists currently lack a universally applicable comparative concept for the notion of word [Haspelmath 2011]. Because a cross-linguistic analysis of wordhood is beyond the aims of my research, the proposed VVC definition is rather restrictive and based on a single criterion of contiguity and separability.

Considering that my study focuses on VVCs, I can make Martin Haspelmath's definition of SVC [Haspelmath 2016] less restrictive: Haspelmath introduces "no linking element" and "no predicate-argument" relation to exclude multi-verb constructions that can be potentially analyzed either as bi-clausal or as SVCs if no additional information is provided (7). However, constructions like (7) can be excluded from SVCs by the criterion of monoclausality.

(7) *She helped me solve the problem* [Haspelmath 2016].

This restrictiveness is redundant for my purposes: members of contiguous compounds (VVCs) cannot in general be analyzed as belonging to different clauses.[2] Making this comparative concept more inclusive has its benefits: in some languages, members of VVCs have to be linked by a 'dummy' morpheme because of morphophonological considerations.

To specify my definition of a 'dummy' morpheme and a 'derivational' element, a given morpheme is considered here as dummy if it only occurs between the components of compounds and hence cannot be treated as a marker of coordination or subordination. According to this approach,

[2] Such an analysis, however, is by no way impossible (see the discussion of various cases in [Panova 2017 ms]). However, the majority of such spurious cases can be analyzed by direct application of Haspelmath's criterion of monoclausality [Haspelmath 2016].

I classify linking morphemes in Dalabon (see the morphemes glossed as 'IVF' (incorporated verb form) in (6) above) and Bininj Kun-Wok as dummy rather than as subordination/coordination markers. At the same time, I do not regard sequential multi-verb constructions in Yimas (Lower Sepik-Ramu family, Papunesia) as SVCs (and, consequently, as VVCs). According to Foley (1991: 325–326), verbal components of these constructions can be separated by the suffix *-mpi* (8) which also marks dependent verbs.

(8) *arm-n* *kay* *i-ka-**ak-mpi-wul***
water-OBL canoe.VIII.SG VIII.SG.O-1SG.A-push-SEQ-put.down
'I pushed the canoe down in the water' [Foley 1991: 326].

By derivational elements, I understand non-inflectional bound morphemes. To identify inflectional morphemes, I follow [Bickel, Nichols 2007] and [Bickel, Zúñiga 2017]. Informally speaking, an inflectional morpheme is a morpheme whose presence is required by a stem of a particular class to be used in a particular context.

Consider two types of SVCs in Tlachichilco Tepehua (Totonak family, North America) — Level I and Level II SVCs as they are named in [Watters 1988]. The constructions differ in two ways, see [Watters 1988: 87–91]. First, in Level II SVCs, an epenthetic *-h-* is inserted between the components of a VVC if the first component ends in a vowel or /*n*/ consonant (9). In Level I SVCs, an epenthetic *-h-* is inserted only if the first element ends in an Antipassive suffix; compare (10) and (11). Second, in Level II SVCs, an inflectional prefix can occur between the SVC components, see (12) [Watters 1988: 91], while in Level I SVCs, an inflectional prefix can only precede both components, see (13) [Watters 1988: 90–91].

Level II SVC, Tlachichlco Tepehua
(9) *miłpa-**h**-wi:ł*
sing-EPHEN-sit
'Sit singing' [Watters 1988: 88].

Level I SVC, Tlachichilco Tepehua
(10) *st'a-**ł**a:'an-ta*
sell-take-PF
'X goes selling Y' [Watters 1988: 88].

Level I SVC, Tlachichilco Tepehua

(11) *'oq-nu**h**-min-ta*
drink-AP-come-PF
'X is coming, drinking' [Watters 1988: 95].

Level II SVC, Tlachichilco Tepehua

(12) *miłpa:-**h**-lak-tawla-ni-y*
sing-EPHEN-3PL.OBJ-sit.down-DAT-IMPFV
'X sits by them (his younger siblings) singing' [Watters 1988: 91].

Level I SVC, Tlachichilco Tepehua

(13) a. *lak-**st'a:-łi:.min**-ta* *pu:laqłi*
3PL.OBJ-sell-come-PF tamales
'X comes selling tamales' [Watters 1988: 90].

b. ***st'a:**-lak-**łi:.min**-ta* *pu:laqłi*
sell-3PL.OBJ-come-PF tamales
Expected: 'X comes selling tamales' [Watters 1988: 90].

In consistence with my definition, I do not treat Level II SVCs in Tlachichilco Tepehua as VVCs, because they can be separated by an inflectional morpheme. I consider Level I SVCs as an instance of VVCs in this language, because the components of these VVCs can only be separated by means of derivational morphology; cf. (11) and (13).

Finally, a note about monoclausality is needed here. Following [Bohnmeyer et al. 2007] and [Haspelmath 2016], I regard the absence of independent negation of construction components as a criterion for monoclausality. In many cases, this criterion is concordant with my criterion of non-separability, whereby components of strictly contiguous VVCs cannot be negated independently. However, some languages can use derivation as a means of expressing negation. For example, in Kwaza (unclassified, South America), the negative morpheme *-he* can occur without any host [van der Voort 2004: 527–530] and hence can be regarded as derivational. While multi-verb constructions in Kwaza appear to instantiate a single grammatical and phonological word [van der Voort 2004: 567–568], the negation can be applied to each component of a multi-verb construction independently (14), see [van der Voort 2004: 531–532].

Kwaza, unclassified (South America)

(14) ***ja-**'he-**kui-**'he-tse*
eat-NEG-drink-NEG-DEC
'He didn't eat and didn't drink' [van der Voort 2004: 532].

To be defined as an SVC or VVC, a given construction should consist of verbs. For [Aikhenvald, Dixon 2006], it is sufficient that a component of a given construction can appear in the same form functioning as a predicate of an independent clause. However, as noted by [Enfield 2009], the verbal status of some SVC components can be questioned: even if a SVC component can appear in the same form as a single predicate, its semantic contribution to the meaning of the SVC can differ drastically from its meaning outside the SVC. The same puzzle holds for VVCs as well. Consider examples (15), (16) from Mapudugun (Araucanian, South America).

(15) ***küpa-ülkantu-**n*
come-sing-1SG.IND
'I want to sing' [Zúñiga 2017: 706].

(16) *küpa-nu-a-fu-lu* *rangi* *antü* *amá*
come-NEG-NRLD-IPD-SVN mid day part
'Wasn't he supposed to come at noon' [(Smeets 2007: 338].

In (16), *küpa* 'to come' is used as an independent verb describing the event of coming. However, in (15) it occurs in the VVC as V1 with a drastically different, grammaticalized desiderative meaning. This case shows that the independent occurrence criterion is not sufficient: it is probably better to regard *küpa* not as a V1 in the VVC, but as a grammaticalized derivational desiderative morpheme (homophonous to the *küpa* verbal root), attached to another verbal root[3]. Otherwise, many cases of construction-specific grammaticalization of verbal stems in which *küpa* has

[3] This consideration is purely typologically-comparative: the suffixing grammar of Mapudungun language makes it difficult to postulate a verbal derivational prefix here. However, it is hardly desirable to incorporate such language-specific criteria into typological research.

lost any transparent semantic relation with the verbal lexeme would have to be defined as a type of VVC. Though the latter approach is not entirely scientifically impossible, it might be more relevant for a study addressing non-compositional VVCs as well.

Haspelmath [2016] excludes grammaticalized SVCs such as (15) from his SVC concept by introducing the 'independent verb' and 'construction' notions in his comparative concept (ii). According to Haspelmath, the independent verb must be able to '*…express a dynamic event without any special coding in predication function ⟨…⟩ and can occur in a non-elliptical utterance without another verb'*. For a given construction to be considered as SVC, Haspelmath requires that '…(it) *must be a productive schematic (construction)*' and that '*…the meaning of a concrete construct can be determined based on the meanings of its parts and the construction meaning…*'.

The approach advocated in [Haspelmath 2016] makes it possible to exclude cases such as (15) from the list of SVCs. However, it will also exclude the majority of asymmetrical constructions in the sense of [Aikhenvald 2006]. Moreover, as noted in [Enfield 2009], it is often difficult to distinguish between the construction meaning and the meaning of each of its components. Consider Directional VVCs (17)–(20) from Mapudungun [Zúñiga 2017: 706–707]:

(17) ***anü-püra****-i*
sit-ascend-IND
'He sat up'.

(18) ***anü-nag****-i*
sit-descend-IND
'He sat down'.

(19) ***rüngkü-tripa****-i*
jump-exit-IND
'He jumped out'.

(20) ***rüngkü-kon****-i*
jump-enter-IND
'He jumped in'.

In these VVCs, the Motion verb which occupies the V2 slot indicates the Direction of the action expressed by the verb in the V1 slot. Now consider these Motion verbs used as independent verbs in (21)–(24):

(21) ***püra-püra-künu****-w-nge!*
go.up-go.up-SFR-PRPS-REF-IMP2S
'Get upstairs quickly' [4] [Smeets 2008: 307].

(22) *epé* *kon-ün* *antü…*
almost enter-PVN sun
'When the sun had almost set…' [Smeets 2008: 403].

(23) *tripa-ke-y-ng-ün* *pun…*
leave-CF-IND-3NS-P night
'They go out at night…' [Smeets 2008: 352].

(24) *ella* *naq-ün* *antü…*
a.bit go.down-PVN sun
'When the sun went down a bit…' [Smeets 2008].

Do these verbs in (17)–(20) mean the same as in (21)–(24)? To what extent is the event of Motion present when these Motion verbs are used as V2s in VVCs? If we state that the Motion verbs lose the Motion component of their semantics in Directional VVCs, then we should not consider (17)–(20) as VVCs. However, Directional VVCs in Mapudungun differ from the case of the grammaticalized verb *küpa* 'come' used as a Desiderative marker.

To solve the problem of possible mismatches between the meaning of a verb in its independent and constructional usage, I suggest the following concept of a verb in SVC/VVC constructions, partly based on [Haspelmath 2016]:

(v) *To count as a verb, the verbal element must make at least some lexical contribution to the semantics of the whole construction. Moreover, a verbal element in an SVC/VVC can be considered a lexical verb only if it contributes either more or less semantic content*

[4] Reduplication indicates that the action is performed quickly [Smeets 2008: 307].

(compared to its meaning as a single predicate) to the meaning of the whole construction, though not more AND less simultaneously.

While this definition excludes fully grammaticalized VVCs like the one in (15), it still treats as VVCs cases of construction-dependent behavior of verbs in certain VVCs like those in (17)–(20).

Finally, I would like to discuss the formal mismatch between verbs used as VVC components and those used as independent verbs. Apart from the general phonological rules of a given language, specific morphophonological rules can apply to VVCs. Where the mismatches emerging due to such rules are at least partially predictable, in my study I still consider the verbal elements that can occur both as VVC components and as independent predicate roots to represent the same verbal entities. This is the case of the 'incorporated verb forms' in Dalabon, see (6) and the corresponding reference. In some languages, however, independent verbs and VVC components sharing the same meaning can drastically differ phonologically. Consider (25) from Tiwi (isolate, Australia):

(25) *ji-məni-**marikuaŋəpi-ŋa***
HE-ME-dancing-grab
'He grabbed me while I was dancing' [Osborne 1974: 47].

The form *marikuaŋəpi* describing the dancing event is only found in VVCs, while its free-verb synonym is *joi* 'to dance' [Osborne 1974: 47–48]. All verb-headed compounds in Tiwi exhibit such strong and unpredictable suppletive patterns (see the list of forms in [Osborne 1974: 48–49]). In my study, I do not treat such compounds as VVCs. The same holds for "affixal predicates" which can be hosted by verbal stems in Wakashan languages: see [Wojdak 2008: 159–169] for Nuu-chah-nulth.

1.2. Heads and Modifiers in SVCs/VVCs

With regard to Head-Modifier relations in SVCs, Aikhenvald [2006] establishes two broad classes of SVCs defined by the compositional and semantic properties of their components [Aikhenvald 2006: 22–23].

Verbal components in *symmetrical SVC*s come from an open class, have the same impact on the semantics and morphosyntax of the whole construction and tend to lexicalize [Aikhenvald 2006: 28–36]. By contrast, components of *asymmetrical SVC*s differ in this respect: "minor" verbs come from a closed class and can only modify the "major" (open class) verb meanings. "Minor" verbs tend to be semantically bleached and are prone to grammaticalization [Aikhenvald 2006: 30–36]. All asymmetrical SVCs are semantically headed by the major verb, while only some symmetrical SVCs are semantically headed. The mutual Head — Modifier ordering in semantically headed constructions is construction-specific.

VVCs with verbs *hipaĥ* 'know how to' and *tuk* 'want to' in Hup (Nadahup family, South America) can be viewed as typical instances of asymmetrical VVCs, see [Epps 2008: 420–421]. Hereafter, I define such structures as 'Mental Process VVCs'. These and several other event-argument-taking verbs (viewed on the semantic, but not on the syntactic plain) can directly follow their verbal arguments in VVCs as in (26), (27). Hence, we can conclude that the V2 slot in the Mental Process VVC in Hup is 'closed', while the V1 slot is 'open'.

Hup, Nadahup family

(26) *yɨ́t=mah tɨ́h* ***[yo-d'oʔ]-hipã̰h****-níh*
thus-REP 3SG [hang.from.above-take]-know-NEG
g'ɔ̰̃h-g'et-g'óʔ-op*=b'ay*
be-stand-go.about-DEP-AGAIN
'So he was standing around, not knowing how to carry (the fish)' [Epps 2008: 420].

Hup, Nadahup family

(27) *ʔɨ́n-ăn* ***[bi-hitam]-tuk****-yóʔ…*
1PL-OBJ [work-cooperate]-want-SEQ
'Having wanted to help us' [Epps 2008: 420].

Hup shows an example of a typical symmetrical VVC as well. According to Epps [2008: 415–416], an unrestricted set of verbs can directly precede another verb to express an action performed simultaneously with

that of the second verb as in (28), (29). This construction exhibits no evidence of semantic bleaching of any of its members.

(28) *ʔãh* ***ʔəg-g'óʔ****-óy*
1SG drink-go.about-DYNM
'I would go around drinking' [Epps 2008: 411].

(29) *tɨh* ***yamhidɔʔ-g'ɔ́p****-ɔ́h*
3sg sing-serve-DECL
'I was singing while serving beer' [Epps 2008: 416].

Aikhenvald's [2006] approach is prototype-based, and she is aware that her proposed classification is not universally applicable [Aikhenvald 2006: 36]. As noted by [Enfield 2009], a class can be closed or open only compared to another class. Consider the VVC in Ese Ejja (Takanan family, South America) in (30), (31). In this VVC, the first verb expresses the Caused Motion event, while the second specifies its Direction; see *Section 2* for definitions of the constructions addressed.

(30) ***ye-kwaya****-ka-a=kwana=pwa*
bring-put.out-3A-RPAS=3PL=RPAS
'We went out (by river Natawa) (*lit*. The river brought us…)' [Vuillermet 2013: 420].

(31) *iñ̃awewa=pi'ai* *kwiji-kwiji-ani*
dog=ALSO bark-RED-PRS
ojaya *owa=zapato* ***jya-sowa****-ka=jo*
3GEN 3ERG=shoe(Sp) throw-go.up.TR-3A=TMP.DS
'The dog barks when he lifts his shoe' [Vuillermet 2013: 579].

The V1 slot is restricted to Caused Motion verbs and the V2 slot is restricted to several Path verbs. Both slots in this construction should be considered as closed according to [Aikhenvald 2006]. However, it is unclear whether the Directional VVC in Ese Ejja and the Mental Process VVC in Hup are asymmetrical in the same sense.

Moreover, the symmetrical/asymmetrical distinction is based on heterogeneous parameters (semantic and morpho-syntactic headedness and compositional restrictions on each component). If we consider

again the Mental Process VVC in Hup, we can conclude that the semantic head is located in the V2 slot. However, the list of verbs which can enter the V2 slot is more restricted than the list of verbs that can enter the V1 slot.

Despite the shortcomings discussed above, it is tempting to preserve and test the generalizations established in the framework of [Aikhenvald 2006]. To make symmetrical/asymmetrical distinction more universally applicable and fine-grained, I propose to study semantic headedness independently of compositional properties of elements. As noted in [Croft 2001], the relationship between Heads and Modifiers can only be studied cross-linguistically by employing a universally applicable semantics-based definition of a Head. Such a definition was provided by [Zwicky 1985: 4] and elaborated in [Croft 2001: 257] in his concept of *Profile equivalent* (vi):

(vi) In a combination X + Y, X is the *profile equivalent* if X profiles/describes a kind of thing profiled/described by X + Y.

I use Croft's definition of profile equivalent as a definition of Head in VVCs. At the same time, while, according to this definition, Head cannot be established in every construction, in my analysis, I consider only those VVCs that have an identifiable semantic Head (see *Section 2*).

1.4. A pilot sample

I use a sample of 12 languages (*Table 1*, p. 424), the language and family names taken from Glottolog, except for =|Hoan which is indicated as Amkoe in Glottolog.

Though small, this sample is genetically and areally balanced, see [Hammarström, Donohue 2014]. The only aspect where it can be considered unbalanced is that this study is focused on three VVCs: the Manner-of-Motion VVC, the Directional VVC, and the Mental Process VVC (see *Section 2*), with the latter VVC being not only the least frequent of them but also absent from languages from 3 macroareas: Multinesia, Australia, and Africa (see *Table 2*, p. 424).

Table 1. Language sample

Language	Family	Macroarea
Hup	Nadahup	South America
Mapudungun	Araucanian	South America
Ese Ejja	Takanan	South America
Tlachichilco Tepehua	Totonac	North America
Kiowa	Kiowa-Tanoan	North America
Chimalapa Zoque	Mixe-Zoque	North America
Eastern Kayah	Sino-Tibetan	Eurasia
Chukchi	Chukotko-Kamchatkan	Eurasia
Saliba	Austronesian	Multinesia
Imonda	Border	Multinesia
Bininj Kun-Wok	Gunwinyguan	Australia
=|Hoan	Kxa	Africa

Table 2. VVCs and macroareas

Language	Manner-of-Motion	Directional	Mental Process	Macroarea
Hup	+	+	+	South America
Mapudungun	−	+	+	South America
Ese Ejja	−	+	−	South America
Tlachichilco Tepehua	+	−	−	North America
Kiowa	−	−	+	North America
Chimalapa Zoque	−	+	+	North America
Eastern Kayah	+	+	+	Eurasia
Chukchi	+	−	−	Eurasia
Saliba	+	+	−	Multinesia
Imonda	+	+	−	Multinesia
Bininj Kun-Wok	+	+	−	Australia
=|Hoan	+	+	−	Africa

The data for each language is taken from reference grammars and, where possible, from publications on this specific topic. The data for the Chukchi language was partially acquired during my fieldwork in 2016–2017. For Tlachichilco Tepehua and Bininj Kun-Wok, data from sister languages was additionally used for comparative purposes (these sources are also indicated in *Table 3*). The data sources I used are represented in *Table 3*.

Table 3. Reference data

Language	**Sources**
Hup	Epps 2008
Mapudungun	Zúñiga 2006; 2017; Baker et al. 2005; Smeets 2008
Ese Ejja	Vuillermet 2012; Vuillermet 2017
Tlachichilco Tepehua	Watters 1988; Kung 2007
Kiowa	Watkins 1984
Chimalapa Zoque	Johnson 2000
Eastern Kayah	Solnit 1997; 2006
Chukchi	Dunn 1999; Muravyova et al. 2000
Saliba	Margetts 1999
Imonda	Seiler 1985
Bininj Kun-Wok	McKay 1975; Evans 2003; Evans 2017
=|Hoan	Collins, Gruber 2014; Berthold, Gerlach 2017

2. Constructions studied

2.1. The Manner-of-Motion VVC

(vii) The Manner-of-Motion VVC
The Manner-of-Motion VVC is a VVC in which one component indicates a Motion event, while another (the other?) component describes the Manner the Motion is performed or, optionally, an Action performed simultaneously with the Motion event.

I follow Talmy [2000] in his definitions of Manner and Motion. In my study, I do not differentiate between Motion verbs that additionally lexicalize Path and those that do not. Hereafter, I do not use the label "Motion verb" for Manner-of-Motion verbs.

The last component of my definition (vii) needs a special note. Consider the following VVCs from Bininj Kun-Wok (Gunwinyguan, Australia) in (32), (33):

(32) *nahnane* ***∅-wage-yihmi-re****-i*
MA:DEM 3P-crawl-IVF-go-PI
(pointing to the tracks left by a Dreamtime being) 'This is where he came crawling along' [Evans 2003: 543].

(33) *ga-**ganj-ngu**-nihmi-re*
3-meat-eat-IVF-go.NP
'He goes along eating meat' [Evans 2003: 536].

The last verb in both VVCs is a Motion verb. Notably, however, the semantic class of the verbs occupying the V1 slot is less evident. In (32) it is a Manner verb, and the semantic Head of this construction is clearly a Motion verb. The situation is different in (33). Normally, one does not classify verbs like 'eat meat'[5] with those of the Manner of Motion. How-

[5] The V1 in this VCC is itself a complex verb stem with an incorporated nominal stem (the morphological structure and noun incorporation process in Bininj Kun-Wok is described in detail in [Evans 2003]).

ever, in several languages of my sample (Hup, Tlachichilco Tepehua, Saliba, Bininj Kun-Wok and =|Hoan), these evidently non-Manner verbs describing simultaneous co-events can occur in the same slot with Manner verbs. This makes the distinction between Manner and non-Manner verbs in such languages less clear.

Considering that for many languages the distinction between "Manner co-event" and "Simultaneous Action co-event" is obscure, I regard all the VVCs presented in (32)–(33) as instances of Manner-of-Motion VVCs. For my study, the ability of "genuine" Manner verbs (e.g., 'run', 'jump', 'swim', etc.) to participate in VVCs is crucial. Hence, if a language only shows VVCs structured like 'eat-go' (go while eating), 'sing-come' (come singing) but no VVCs like 'run-go' (go running), 'swim-come' (come swimming), I do not treat VVCs in this language as Manner-of-Motion VVCs.

The semantic Head status of the Motion verb in these constructions is not always evident. Some grammars note that a Motion verb is always(??) a semantic Head (e.g., see [Epps 2008)] for Hup) and reflect this correspondingly in translations (e.g., (32), (33) from Bininj Kun-Wok above). In other cases, the Head-Modifier structure of these VVCs is less clear. Consider (34), (35) from Eastern Kayah (Sino-Tibetan, Eurasia):

(34) *pípɛ̀* ***jo*** ***cwá*** *rʌ́*
butterfly fly go Ø
'They (butterflies) flew away' [Solnit 1997: 77].

(35) *jɛ* ***cwá*** ***rʌ́*** *sínɛ*
carry.on.shoulder go PART gun
'(They) went carrying guns on their shoulders' [Solnit 1997: 73].

The question arises if there are any semantic Heads in these constructions or, in other words, if (34) primarily describes an event of 'flying' or an event of 'going'? According to the English translation in [Solnit 1997: 73], at least the verb 'go' in (35) is the semantic Head. At the same time, Solnit [2006: 150] adds an alternative translation to this example: '(they) carried away guns on their shoulders'. This translation indicates that the verb *jɛ* 'carry.on.shoulder' is a possible Head and the whole

construction may instantiate a Directional VVC but not a Manner-of-Motion VVC. I address this problem in the following section.

Among the languages included in my sample, Manner-of-Motion VVCs are present in Hup, Tlachichilco Tepehua, Eastern Kayah, Chukchi, Saliba, Imonda, Bininj Kun-Wok and =|Hoan.

2.2. The Directional VVC

(viii) The Directional VVC
The Directional VVC is a VVC in which one component indicates an Event and the other component indicates the Direction in which this Event evolves.

The term Direction I use here roughly corresponds to Talmy's [2000] notion of Path. However, unlike Path, Direction can be specified even for an event with no Motion component. Consider Directional VVCs in Saliba (Austronesian, Papunesia):

(36) *ye-**tu-dobi**-ei-∅*
3SG-throw-go.down-APP-3SG.O
'He threw it down' [Margetts 1999: 126].

(37) *ye-**hedede-dobi** i-wane "Eey Tau Mekemekeya…"*
3SG-tell-go.down 3SG-say INTRJ man Name
'He called/spoke down and said "Eey, Tau Mekemekeya"' [Margetts 1999: 122].

In (36), the Motion verb *dobi* 'go down' specifies the Direction of a Caused Motion event expressed by the verb *tu* 'throw'. In (37), however, there is no Motion event — the verb *dobi* only indicates the downward orientation of the participant.

For ambiguous cases, I classify constructions as either a Manner-of-Motion VVC or a Directional VVC depending on the translation provided by the grammar's author. Some cases, however, are not ambiguous: I did not classify as Directional those VVCs where only Manner verbs can combine with Motion verbs. Instead, such VVCs are classified

here as Manner-of-Motion VVCs. Constructions with no motion component cannot be classified as Manner-of-Motion VVCs either.

Consider (38)–(40) from Imonda (Border family, Multinesia):

(38) *tetoad* ***paiha-i-pia****-n*
bird fly-LINK [6]-come-PST
'The bird came flying' [Seiler 1985: 108].

(39) ***lõl-peha****-na-f*
talk-go.down-BEN-PRS
'Go down, talking to him' [Seiler 1985: 109].

(40) ***lol-peha*** *fe-na-f*
talk-go.down do-BEN-PRS
'Talk down to someone' [Seiler 1985: 109].

Examples (38) and (39) illustrate a Manne-of-Motion VVC and example (40), a Directional VVC. The semantic difference between (39) and (40) is a key to distinguish between the two VVCs in Imonda.

Among the languages in my sample, Directional VVCs are found in Hup, Mapudungun, Chimalapa Zoque, Eastern Kayah, Saliba, Imonda, Bininj Kun-Wok, and =|Hoan.

To conclude this discussion, the distinction between Heads and Modifiers in Directional and Manner-of-Motion VVCs turns out to be virtually irrelevant for their formal properties. As discussed below in *Section 3.2*, the order of components in these VVCs seems to be influenced by features orthogonal to the Head-Modifier distinction.

[6] According to Seiler [1985: 108; 119–132], the only function the linker *-i-* has in the modern Imonda is that of a morphological link between members of certain VVCs and between the classifier prefix and the verbal root. Notably, classifiers show a historical link with some verbs occurring in VVCs; see [Seiler 1985: 119–130].

2.3. The Mental Process VVC

(ix) The Mental Process VVC
A Mental Process VVC is a VVC in which mental process verbs combine with verbs denoting arguments of the events described.

The only 'mental process verbs' considered in this study are: 'to want' (41), 'to know/ understand' (42) and 'to learn' (43). All the three can be found in VVCs in Chimalapa Zoque (Mixe-Zoquean, North America):

(41) *piceŋhoʔ dəš də=**min-təʔ**-keʔt-pa*
thus 1PRN 1A=come-want-REPET-INC
'That's why I want to come back again' [Johnson 2000: 237].

(42) *ney komo ʔune=dəkka kwandu **ʔotoŋ-ʔaŋ.may**-šuk-wə*
same like child=NPL when speak-learn-3PL-COM
'Just like children when they learn to speak' [7] [Johnson 2000: 237].

(43) *pwes ʔaber hunaŋ bi kopak si **yoš-muš**-pa*
well let's.see how DEF head if work-know-INC
'Well, let's see how he thinks, if he knows how to work' [Johnson 2000: 311].

Among the languages in my sample, Mental Process VVCs are present in Hup, Mapudungun, Kiowa, Chimalapa Zoque and Eastern Kayah.

3. Component ordering and its governing principles

Alexandra Aikhenvald [Aikhenvald 2006] assumes that the order of components in semantically-headed SVCs is language- and

[7] There is probably a misprint in the translation line in [Johnson 2000: 237]: this sentence is translated as 'Just like children when they learn to walk'. However, no points about (non)compositionality are made. Throughout the grammar, V1 *ʔotoŋ* is invariably translated as 'speak'.

construction-specific. This conclusion is at odds with [Foley, Olson 1986] who note that Motion and Posture verbs tend to occur as final members of SVCs. Moreover, it was argued by Givón [2009] that SVCs (and, consequently, VVCs) arise from multiclausal structures (e.g., see [Rose 2009] for a study of this process in Emerillon). Hence, it can be expected that the Head and Modifier ordering in VVCs would correlate with that in other constructions. Finally, even if the order of components in a given construction is language-specific, it does not necessarily mean that this order is random cross-linguistically. In my pilot study, I investigate potential correlations between the order of Heads and Modifiers in VVCs and the features listed below in (viii). The correlations are addressed independently for 3 types of VVCs.

(ix) Features that possibly correlate with the component order in VVCs:
— The dominant verb — object order.
— The order of clauses in semantically correlative analytical constructions (if any).
— The Head — Modifier order in other verb-headed compounds (hereafter, incorporation) as, e.g., in noun incorporation constructions (where other compound constructions exist).

I use Matthew Dryer's [Dryer 2013] principles of determining the dominant object — verb order in a language. Where the order is flexible, this is indicated in the corresponding section of Table 4 below.

Recall that I take into account here not only the object and verb ordering but also the ordering in multi-verb syntactic structures that are (quasi)synonymous to the VVCs addressed. It should be noted that only Manner-of-Motion and Mental Process VVCs have semantically obvious corresponding syntactic structures while multi-verb syntactic structures that express (roughly) the same meaning as Directional VVCs are difficult to find.

Manner-of-Motion VVCs can be (quasi)synonymous with a wider range of syntactic structures. The closest equivalent for Manner-of-Motion VVCs in Bininj Kun-Wok (Gunwinyguan) is a multi-word SVC. At the same time, Manner-of-Motion VVCs correspond to combinations of finite verb and converb clauses in Hup (Hupde) and Chukchi

(Chukotko-Kamchatkan). To avoid methodological opportunism, I did not compare the order of components in Manner-of-Motion VVCs with that in structures (quasi)synonymous with these VVCs.

This paper takes the biclausal structure of [$_{\text{MATRIX}}$Mental Process verb [$_{\text{EMBEDDED}}$Complement verb]] to be corresponding to that of Mental Process VVCs. Compare a Mental Process VVC in (44) and, presumably, a (quasi) synonymous syntactic structure in (45) from Chimalapa Zoque (Mixe-Zoquean, North America):

(44) *piceŋhoʔ dəš də=**min-təʔ**-keʔt-pa*
Thus 1PRN 1A=come-want-REPET-INC
'That's why I want to come back again' [Johnson 2000: 237].

(45) *dəš ʔən=təʔ-pa yak-cən-wə kastro lo cruz*
1PRN 1E=want-INC CAUS-sit-COM castro lo cruz
'I want Castro lo Cruz to be elected' [Johnson 2000: 308].

In this study, I compare the order of components in VVCs both to that of Object — Verb, Head — Complement Verbs, and to the ordering of components in noun incorporation (NI) constructions, see [Mithun 1984].

In general, NI is considered to be an optional construction, see [Mithun 1986]. Building on its definition in [Caballero et al. 2008], I propose another definition in (x) below. Note that my definition applies to languages that lack verbal inflection and excludes cases of 'obligatory incorporation'.

(x) A definition of NI constructions.
NI is an OPTIONAL *construction used to express a particular semantic relation between the predicate and one of its participants. A NI construction combines the verb (which expresses the predicate) and the nominal element (which expresses a participant) in a single NI construct. The incorporated nominal element (hereafter, IN) cannot perform more discourse functions than those it performs in alternative constructions. Only derivational elements can separate the IN from the verb. No inflectional elements pertaining to the nominal component or its modifiers can occur inside the verbal construct.*

To specify my definition of an *optional construction*, o*ptional* means here that a given NI construction is not the only one a given language can use to express a given relation between the Verb and its Patient, the Verb and its Instrument, etc.

Of course, this definition has its limitations. In consistence with (x), Lakhota (Siouan, North America) and some Athapaskan languages like Koyukon (Na-Dene, North America) should lack NI constructions altogether. However, these and other methodological contraversions fall outside the scope of my VVC pilot study.

Presented below is data on the Head-Modifier ordering in the three VVCs under study and in comparable constructions found in all the languages of my sample (*Table 4*). The subsequent subsections discuss the findings of the comparison and provide some generalizations with likely explanations.

Table 4. Ordering in core sample

Language	Manner-of-Motion	Directional	Mental Process	OV/VO	Incorporation
Hup	M-H	M-H	M-H	OV	N-V
Mapudungun		H-M	H-M	VO	V-N
Ese Ejja		H-M		OV	N-V
Tlachichilco Tepehua	M-H			VO	N-V
Kiowa			M-H	OV	N-V
Chimalapa Zoque		H-M	M-H	VO	N-V
Eastern Kayah	M-H	H-M	M-H	VO	V-N
Chukchi	M-H			OV	N-V
Saliba	M-H	H-M		OV	V-N; N-V
Imonda	M-H	H-M			
Bininj Kun-Wok	M-H	M-H		OV	N-V
=|Hoan	M-H	H-M		VO	

3.1. Mental Process VVCs

Mental Process VVCs are found in 5 languages of my sample, with 2 OV and 3 VO languages among them. My observation shows the Mental Process VVC to be the only VVC exhibiting strong correlation between the order of Head and Modifier components and the order of constituents in other constructions (*Table 5*).

Table 5. Mental Process VVCs ordering

	H-M order	**OV / VO**	**Inc**	**Complement**
Hup	M-H	OV	NV	C-H?
Kiowa	M-H	OV	NV	no data
Mapudungun	H-M	VO	VN	H-C
Chimalapa Zoque	**M-H**	VO	NV; AdvV	C-H?
Eastern Kayah	H-M	VO	VN	C-H

Chimalapa Zoque is the only language in which the order of Heads and Modifiers in this VVC does not agree with the order of verb-and-object and head-and-complement clauses. At the same time, the Head-and-Modifier ordering in Chimalapa Zoque Mental Process VVCs is harmonic with that of Heads and Modifiers in incorporation constructions. While it is difficult to make any generalizations on the basis of a single language, I argue that Chimalapa Zoque represents a telling case. According to Campbell, Kaufman, Smith-Stark [1986: 54], Mixe–Zoquean languages are likely to have displayed the OV order before their shift to the VO order under the influence of the Mesoamerican linguistic area. Hence it is possible to regard the Modifer-Head order in Chimalapa Zoque Mental Process VVCs (together with the N–V and Adv–V order in incorporation constructions) as a relic of its historical OV order.

I argue that the correspondence between the order of Heads and Modifiers in Mental Process VVCs and the order of Heads and Modifiers in incorporation constructions is of a diachronic nature. The order of components in the Mental Process VVC reflects the order

of head-and- complement clauses in these languages that existed at the time this VVC arose; (see similar considerations for nominal compounds in [Comrie 1980: 85] and [Gaeta 2008: 122].

3.2. Manner-of-Motion and Directional VVCs

Manner-of-Motion VVCs are found in 9 languages of my sample, with 6 of these exhibiting the dominant OV order and 3, the VO order. Manner verbs precede Motion verbs in all the languages addressed (*Table 6*). Hence, the order of Head and Modifier in Manner-of-Motion VVCs does not agree with the object and verb ordering in all three VO languages. If, however, the ordering in incorporation constructions is also taken into account, this disharmony is only true for Eastern Kayah (|=Hoan lacks incorporation). Recall that Saliba displays both N–V and V–N ordering in incorporation construction.

Table 6. Ordering in Manner-of-Motion VVCs

	VVC	**OV / VO**	**Inc**
Hup	M-H	OV	N-V
Ese Ejja	M-H	OV	N-V
Chukchi	M-H	OV	N-V; Adv-V
Saliba	M-H	OV	N-V; V-N
Imonda	M-H	OV	—
Bininj Kun-Wok	M-H	OV	N-V; Adv-V
Tlachichilco Tepehua	**M-H**	VO	Adv-V
Eastern Kayah	**M-H**	VO	V-N
|=Hoan	**M-H**	VO	—

Directional VVCs are found in 9 languages of my sample. Except for two OV languages (Hup and Bininj Kun-Wok), this VVC exhibits the Head-Modifier ordering. Hence, 3 OV languages demonstrate disharmony between the VVC and the in-clause ordering (as shown in bold in *Table 7*).

Table 7. Directional VVCs

	H-M order	**OV / VO**	**Inc**
Hup	M-H	OV	NV
Bininj Kun-Wok	M-H	OV	NV; AdvV
Ese Ejja	**H-M**	OV	NV
Saliba	**H-M**	OV	NV; VN
Imonda	**H-M**	OV	—
Mapudungun	H-M	VO	VN
Chimalapa Zoque	H-M	VO	NV; AdvV
Eastern Kayah	H-M	VO	VN
|=Hoan	H-M	VO	—

Unlike in Mental Process VVCs, the order of components in Directional and Manner-of-Motion VVCs does not seem to strongly correlate with the ordering of Heads and Modifiers in other constructions addressed. Discussed below are some speculative considerations, to be elaborated in forthcoming studies, on the factors restricting the component ordering in these VVCs.

Recall that the Head and Modifier status of components in Manner-of-Motion VVCs is problematic. Moreover, the difference between Manner-of-Motion VVCs and Directional VVCs is not obvious for languages where both constructions are present. Hence, it is probably safer to discuss the ordering of Path-encoding verbs (which function as Directional verbs [8] in Directional VVCs and as Motion verbs in Manner-of-Motion VVCs) vs. non-Path-encoding verbs in VVCs. Non-Path-encoding verbs in Manner-of-Motion VVCs function as either Manner-of-Motion verbs or verbs linking simultaneous co-events to Motion events. **Path verbs tend to follow non-Path verbs** in Manner-of-Motion and/or Directional VVCs.

SVCs are frequently discussed with respect to the iconicity of their components' ordering and the sequential relation between the (sub)events

[8] Recall that Motion verbs in Directional VVCs are not necessarily Path verbs in Talmy's [2000] sense; according to my definition, they can also function as Deictic verbs.

they express; see [Durie 1997; Bril 2004; Aikhenvald 2006]. One of the issues addressed is whether it is possible to directly attribute the [non-Path verb]–[Path verb] preferred order to any cognitive factor. My answer is 'no': no cognitive explanation can be directly applied to the order preference observed in my sample.

The most obvious argument against cognitive motivation of the [Manner]–[Motion] and [Action]–[Direction] ordering is that the latter seems to be preferred in only SVCs and VVCs. As regards bound Direction/Path morphemes, one can find languages with prefixal Path expression and Manner following Motion in verb-framed languages; see the languages addressed(??) in [Slobin 2004]. I am unware of any studies claiming the existence of any preferences in the Path and Manner morpheme ordering.

The second argument against a direct cognitive-functional explanation is that it is not clear what cognitive factors can 'force' Path/Deixis verbs to occur VVC-finally.

Instead, I suppose that a combination of cognitively and diachronically motivated factors are responsible for the strong tendency for Path verbs to follow non-Path verbs in VVCs.

I argue that the order of components in Manner-of-Motion and Directional VVCs can be attributed to iconicity principles. At the same time, iconicity has nothing to do with the VVCs themselves, since it is rather observed in constructions underlying these VVCs. To be precise, I hypothesize that Directional VVCs and Manner-of-Motion VVCs are likely to arise from mono- and multi-clausal constructions which combine the causally-related subevents.

Consider the following VVCs from Saliba (46a–c); Eastern Kayah (47a–b) and =|Hoan (48a–b). For each language, the first example is a Manner-of-Motion VVC, the second is the Directional VVC, and the third example is a Cause-Result VVC (this VVC was not in the focus of my study).

Saliba

(46) a. *ye-sobu-lage*
3SG-dance-arrive
'He came dancing' [Margetts 1999: 119].

b. *ye-tu-dobi-ei-Ø*
3SG-throw-go.down-APP-3SG.O
'He threw it down' [Margetts 1999: 126].

c. *ye-sikwa-he-beku-Ø*
3SG-poke/hit-CAUS-fall-3SG.O
'He poked it to make it fall' [Margetts 1999: 118].

Eastern Kayah

(47) a. *pípɛ̀ jo cwá rʌ́*
butterfly fly go RØ
'They (butterflies) flew away' [Solnit 1997: 77].

b. *ʔa dɛ thɛ dɤ́ plò kū dɤ́ phrɛ̀ khu*
3 put go.up at:U box in at:U shelf on
'They put it (up) in a box on a shelf' (Solnit 1997: 73).

c. *ʔa chū sʌ̄ lū né ʔīthoə…*
3 stab die 3OBV OBL knife
'They stabbed him to death with a knife' [Solnit 2006: 150].

Hoan

(48) a. *mā tyāqò !”ūū sò kì !ōà nā*
1SG walk enter OBL house inside
'I walk into the house' [Berthold, Gerlach 2017: 168].

b. *mā yā !ánē súi…*
1SG PROG carry descend/lower
'I take something down…' [Berthold, Gerlach 2017: 169].

c. *ma I ǀqǎẽ Ɵkoa cì*
1SG PST beat kill 3PL
'I beat them dead' [Collins 2002: 56].

The semantic similarity between Manner-of-Motion, Directional and Cause-Result VVCs was acknowledged by various authors for Saliba [Margetts 1999: 117] and Eastern Kayah [Solnit 2006: 150].

Indeed, the *telic Path*[9] expression in the VVCs is similar to the expression of Result in Cause-Result VVCs: in (48a) the Result of 'walking' is 'entering'; in (47b), the Result of 'putting' is the 'going up' of the entity 'put'.

The fact that Cause subevents are similar to Manner subevents (see the discussion about the distinction between Manner and Cause in [Talmy 2000: 27–29]) corroborates my hypothesis that Manner-of-Motion VVCs can originate from Cause-Result constructions. Similarity between Cause and Manner can be illustrated by (48) from =|Hoan VVC above. The VVC in (48c) can be understood as 'I killed them by beating' or 'I beat them, and this killed them'. Another fact to additionally support this hypothesis of 'Cause → Manner development' is that at least some languages have Cause-Result constructions acknowledged as a possible source of classificatory causative prefixes indicating the Manner of causation events; see [Bradshaw 1982: 23–24] for Papuan Tip languages and [Margetts 1999: 114–117] for Saliba.

My hypothesis is that Manner-of-Motion VVCs can develop from the sequence [Manner subevent]-[Path/Deixis-expressing Motion subevent], where the Manner subevent has Cause-like interpretation and the Motion subevent has Result-like interpretation of the type 'The butterflies flew (and) went away'→ 'The butterflies fly-went away'. Cause-Result event sequences are known to be expressed iconically; see [Durie 1997; Aikhenvald 2006]. The iconic order is thus preserved in Manner-of-Motion VVCs that are not temporally sequential themselves.

A similar development pathway can be proposed for Directional VVCs. Constructions expressing Cause events and Motion events (caused by preceding events) are reinterpreted as [Action]-[Path/Orientation of a participant of the Action] complex events. Hence, I hypothesize that (46) from Saliba arose from something like 'I throw it, (it) goes down'.

[9] The Path of a Motion event is *telic* if the boundary of the Ground is reached or crossed (e.g., in (48a)). The Path of a Motion event is *atelic* if the boundary of the Ground is not crossed (e.g., *The girl ran toward the fence*). For further discussion of Path telicity, see [Imbert 2014].

4. Discussion. Ordering principles in verb-verb compounds and parallels with serial verb constructions

To begin with, my study demonstrates that the ordering of Head and Modifier components in VVCs is not random. While the order of components is language-specific, it is still influenced by various, though heterogeneous, factors.

The order of verbs in Mental Process VVCs correlates with the order of syntactic constituents and the order of Heads and Modifiers in incorporation constructions. As for Manner-of-Motion and Directional VVCs, their component ordering is better attributed to other principles (seems to abide by other principles??). I argue that the Head and Modifier asymmetry does not influence the component ordering in Manner-of-Motion and Directional VVCs: the ordering preference in these constructions can be better explained by the distinction between Path and non-Path Motion verbs. I argue for *source-oriented factors* [Cristofaro 2017] as a possible explanation of the [non-Path]-[Path] component order preference in Manner-of-Motion and Directional VVCs. I hypothesize that the order of components in these VVCs reflects the order of constituents in less close-knit constructions from which these VVCs have (presumably) developed. This hypothesis needs more testing in further studies.

Additionally, in terms of component order, some types of VVCs are more similar to semantically corresponding less close-knit SVCs than to VVCs with different semantics. Speaking of the Path-second tendency I have observed for Manner-of-Motion and Directional VVCs (*Section 3.2*), I have not encountered any counterexamples in earlier SVC studies such as [Foley, Olson 1985; Givón 1991; Durie 1997; or Aikhenvald, Dixon 2006]. To highlight this point, I briefly discuss some Manner-of-Motion SVCs/VVCs in VO languages and Directional SVCs/VVCs in OV languages.

Thai Manner-of-Motion VVCs (Thai-Kadai family, Eurasia, see [Diller 2006: 164–165]) and Tetun Dili Manner-of-Motion SVCs (Austroasiatic family, Eurasia, see [Hajek 2006: 242–244]) exhibit the [Manner]-[Path] component order. Both languages exhibit the VO dominant order, see [Diller 2006; Hajek 2006].

Taiwan Sign Language[10] employs several means of Motion event expression [Tai, Su 2013]. When a Manner and a Path verb combine in an SVC, the Manner verb precedes the Path verb as in (49) [Tai, Su 2013: 90–93]. It is worth noting that Taiwan Sign Language displays a VO dominant order [Smith 2005: 197].

(49) *FROG* *CRAWL* *JARpro+FROGpro-move.out*[11]
Figure Motion.Manner Ground.pro+Figure.pro-Motion.Path
'The frog crawled out of the jar' [Tai, Su 2013: 93].

Path and Deictic verbs also tend to follow non-Path verbs in Directional SVCs in other languages than those in my sample such as Tariana (Arawak language, South America), see [Aikhenvald 2006: 185–188]. The Khwe language[12] (Khoe-Kwadi family, Africa) shows the same order of components in Directional VVCs, see [Kilian-Hatz 2006: 115–116]. Both Tariana and Khwe exhibit the OV dominant order, see [Aikhenvald 2003; Kilian-Hatz 2006].

Thus, the distinction between 'one-word' SVCs (VVCs) and 'multi-word' SVCs may not be directly manifested in their syntax: given that different factors of both cognitive and diachronic, source-oriented nature shape the morpho-syntax of different semantic types of SVCs, it is the semantics and functions of a particular type of SVC that shape its syntax, rather than the mere level of morphological integration of SVC components.

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[11] A note about transcription should be made. Tai, Su [2013] use the abbreviation *pro* for 'proform' (a replaced form for preceding argument). The + sign indicates that two components are signed simultaneously by both hands. The — sign means that the proform(s) and the Motion / Path verb are expressed as a unit by moving hand. (a hand movement??)

[12] This language name is provided in [Kilian-Hatz 2006]. I could not find this name in Glottolog.

Abbreviations

For Hup

1 — 1st person; 2 — 2nd person; 3 — 3rd person; ART — Article; CF — Constant feature; EDO — External direct obj; HAB — Habitual; HH — Hither; IMP — Imperative; IND — Indicative; LOC — Locative; NEG — Negation; NS — Non-singular; P — Plural; PART — Particle; PO — Primary obj; PFPS — Perfect persistent; PVN — Perfect verb noun; REF — Reflexive; S — Subject/single argument; SFR — Stem formative; TH — Thither; TU — back

For Mapudungun

1 — 1st person; 2 — 2nd person; 3 — 3rd person; ART — Article; CF — Constant feature; EDO — External direct obj; HAB — Habitual; HH — Hither; IMP — Imperative; IND — Indicative; LOC — Locative; NEG — Negation; NS — Non-singular; P — Plural; PART — Particle; PO — Primary obj; PFPS — Perfect persistent; PVN — Perfect verb noun; REF — Reflexive; S — Subject/single argument; SFR — Stem formative; TH — Thither; TU — Back

For Ese Ejja

1 — 1st person; 3 — 3rd person; A — Agent-like argument; ABS — Absolutive; ALL — Allative; DS — Different subject; ERG — Ergative; GEN — Genitive; NPF — Noun prefix; PAS — Past; PERL — Perlative; PL — Plural; PRS — Present; RES — Resultative; RED — Reduplication; RPAS — Remote past; SG — Singular; SS — Same subject; TEL — Telic; TMP — Temporal subordinate; TR — Transitive

For Tlachichilco Tepehua

1 — 1st person; 3 — 3rd person; ALD — Already; AP — Antipassive; ART — Article; DAT — Dative applicative; DIR — Directive; DIST — Distal; FUT — Future; IMPFV — Imperfective; IRR — Irrealis; NEG — Negation; OBJ — Object; PFV — Perfective; REP — Repetitive; PL — Plural; POSS — Possessive; PREP — Preposition; SUB — Subject

For Chimalapa Zoque

1 — 1st person; 1>2 — 1st person Subject, 2nd person Object; 2 — 2nd person; 3 — 3rd person; A — Absolutive; ANTIP — Antipassive; APPL — Applicative; CAUS — Causative; COM — Completive; D — Dependent; DEF — Definite article; E — Ergative; IMPV — Imperative; INC — Incompletive; N — Negative aspect; NEG — Negative; NOM3 — Nominalizer; NPL — Plural marker (nominal); NPL2 — Plural marker (pronominal); PL — Plural; PRN — Pronoun; REL — Relative; REPET — Repetitive; VERS — Versive

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