Not all Agents are created equal: Agents in Motion.

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1. What this is about

In this paper, I gather a body of research about agents in motion predicates that has been going on since 2016 and that inserts itself in a wider crosslinguistic project on motion predicates in general. This wider project has concentrated especially on the nature of the motion itself (what will be called *motion vector* or *vectorization*, section 2.3) and on how the structural representation of motion intersects with other structural subeventive components related to telicity, resultativity and agentivity.
Here I concentrate on agents in this kind of predicates: how agents (true agents) interact with the motion vector and with the undergoer of the motion in a structural representation. We will explore a fine-grained typology of agents in this context (2.2) and see how it intersects with the morphosyntactic patterns observed in our data and in data reported by other researchers (section 3 and 4).

When working with sign languages, there are two issues to take into account especially for those not familiar with the properties and characteristics of sign languages. They are not issues unique to sign languages but they figure prominently in all the literature about the languages, not just about motion predicates. Those two issues are (verbal) classifiers and serial verb constructions (SVC).
What one needs to know about (verbal) classifiers in sign languages is that, of the three verbal types traditionally identified in sign languages since Padden's (1983) work (plain, agreement and spatial), the latter ones, spatial predicates, comprise motion and location predicates and these are mostly those that host classifiers. In the sign language literature, then, a (verbal) classifier predicate contains a handshape morpheme (the classifier itself) that is simultaneously articulated with a (kinetic) movement to denote the displacement[1] incurred by an entity of the class referred to by the classifier.[2] Here are some examples, illustrating the transcription system we use:

(1)	a. (CAR.a) 3_{WE}.a+GO-UP-AWAY 'an entity of the class of vehicles went up and away'	b. (WOMAN.a) 1_{WE}.a+GO-UP-AWAY 'an entity of the class of upright individuals went up and away'

The example in (1)a. can be used to refer to a car heading out up a mountain. The classifier, 3+__,

[1] In the case of locative predicates, the short quick downward movement is usually transcribed as __+BE_AT and indicates the location at which an argument is situated in the signing space. The kinetic movement in this case does not denote a displacement but rather the state of being at a particular location (that is, what we usually think of as a locative predicate) and has been claimed to be epenthetic in nature (Brentari, 1993).

[2] The list of literature on classifiers is long and wide and the (sometimes, wildly) different theoretical positions are as long and wide. Here we hold them as pieces of grammar interacting and actively participating in the syntactic life of the language. Not all positions about classifiers consider them as part of the grammar.

(thus named because it uses the same handshape as the one used for the number "3")[3] is considered a *whole entity* classifier used for vehicles; the part after the "+" sign, __+GO-UP-AWAY, identifies the movement used in the articulation of the sign. Those two parts are morphemically distinct but they are articulated simultaneously: handshape 3+ is articulated as the hand moves up and away. The lexical item CAR, coindexed with classifier 3+, may or may not be present.
In example (1)b., the classifier 1+ (also transcribed that way because the handshape is the same as the one used for the number "1") is considered a *whole entity* classifier used for upright individuals, typically a person. Notice that the movement morpheme, __+GO-UP-AWAY, is the same as in (1)a. but the classifier identifies the *class* that the coindexed argument belongs to, vehicles or upright individuals.
There have been several typologies of classifiers. Here we follow the one in Benedicto and Brentari (2004), based on Engberg-Pedersen (1993): *handling* (HDL-) classifiers, usually associated with the way objects are held or manipulated; *body part* (BP-) classifiers, involving the relevant body part of an entity; *whole entity* (W/E-) classifiers classify an entity as a whole. Another type, that we will not refer to in this paper, is referred to as *extension and surface*, where the handshape identifies certain properties of the entity such as perimeter, width or surface.
Classifiers and motion predicates are intimately linked, they carry a life together. Unsurprisingly then, classifiers will figure prominently in our hypothesis for the derivation of the structures observed in agentive motion predicates (section 4).

The second issue to take into account is the existence of *serial verb constructions* (SVCs) in sign languages. SVCs are by far not unique to sign languages, but they are notably present in them (see, e.g., Lau 2012). SVCs involve, among other properties, a sequence of (usually bare) verbal elements with no coordinating or subordinating connector, one single clausal inflection, monoeventivity and the apparent sharing of certain arguments. Here is an example from Edo; we will see a number of such structures throughout the paper.

(2) Òzó sùá ágá dé [Edo]
Ozo push chair fall
'Ozo pushed the chair down.' (from Lau 2008, citing Baker 1989)

This paper will be organized as follows. Section 2 will deal with setting up some basic issues: the notion of *agent* that will be used throughout the paper, the fine-grained typology of agents we will be looking at, the basic structures we assume and a brief overview of the data used for the analysis. Section 3 presents and identifies the range of morphosyntactic patterns observed in the data and section 4 presents the hypothesis and the structural derivations to account for the patterns in section 3. Finally, section 5 wraps up the issues and discusses some of the paths moving forward.

2. Setting up the issues.

We use this section to set some basic background issues that will be useful in the following sections. First, we narrow down the notion of *agent* that we will be using here (2.1). Then, we present a finer-grain typology of agents in motion predicates that we have used to collect our data (2.2).

[3] We use numbers and letters that share a handshape configuration to transcribe the handshape of a classifier. We may also use 'diacritics' to modify a named handshape:] indicates bending at the first joint of fingers; > indicates bending at the knuckles; and) indicates a curving of the fingers.

Next (2.3) we discuss the structures that we have defined in previous work for motion predicates, which will be used as the basis for our structural hypothesis. And finally we will present how the data used here were collected and which elicitation instruments were used.
A final caveat is in place. It has been the case that when using the word 'instrument,' there is a tendency to think 'experimental work.' This paper is not the result of an experimental design, the *instrument* has been used as a tool for elicitation of the traditional sort for qualitative analysis, not for quantitative analysis. The focus of this work is not to analyze frequency or preference. Rather, what we want to discover here is the type of Grammar that generates the structures produced, the types of syntactic operations that take place and why, and the locus of potential crosslinguistic parametrization

2.1. Some preliminary distinctions: sharpening the labels.

In discussions about transitive/intransitive alternations, it is common to find the terms causative/inchoative alternations and to make distinctions between syntactic, morphological and lexical causatives (see Santoro and Aristodemo 2021 for a recent example). Syntactic causatives include agents and external arguments that are not agents, strictly speaking, but rather probably true causers; for instance, in the contrast *the water boils*/*John boils the water*, John is not strictly speaking an 'agent' since John is not directly acting on the water, in fact, most probably John never touches the water. This contrast (between directly acting on the theme/undergoer/object, or not) becomes relevant in the syntax of some of the cases that we observe in ASL (and in SLs in general).

So, in this work, I will restrict the term 'causative' for true causatives (mostly those in periphrastic causatives, though also present in some morphological causatives). *Agent* in this paper will refer to those (external) arguments that maintain a direct volitional actual acting on the internal argument, whose agentivity can be detected by means of syntactic tests (as in Benedicto and Brentari, 2004).[4] I will therefore keep the term 'agent' separate from (syntactic) 'causer/ causative' and from any other external argument that does not maintain a direct acting of the external argument on the internal argument (as is the case of the external argument of *boil* in English). This is not simply a semantic notion, but a distinction that in some languages has clear morpho-syntactic properties (though obviously it is also obfuscated or clouded in languages of the English type).

As for the internal argument, it is also common to use terms like *theme*, *patient* and others. I will here stick to undergoer (abbreviated when necessary as UGr), a term I borrow from Ramchand's (2008) work and which is broad enough to encompass the types of arguments that we may find in the data under investigation here.

With regards to the notion of *path*, it is common to use it in reference to PP expressions like *to the church*, which indicates, rather than the path, the end of that path. Here we will use the notion of *motion vector* to refer to the path, that is, the actual line or curve that defines the actual *path*, that (abstract) line that goes from one point or to another. We will use the term *vectorization* for the syntactic structure that creates a motion vector (see section 2.3). In a vector, we can identify the head (where it goes to), the tail (where it comes from) and the actual body of the vector. These

[4] The use of *syntactic* tests is crucial especially for intransitive predicates, where crosslinguistic correspondences may fail. That is, a certain verb in one language may behave as an unaccusative (non-agentive), whereas the seemingly equivalent in another language may behave as an unergative (agentive). The work of Hale and LaVerne (1999) is a good example of that.

notions are useful to identify the (verbal) elements that conform the *series* in a motion serial verb construction (see, as a case in point, the Mayangna example in (9) later on). We will not directly deal with the motion vector here, but we will refer to it.

2.2. Some further distinctions concerning agents in motion predicates.

Within the range of *agents* in motion predicates, I will also make further distinctions, all of which will turn out to be of use when examining the range of morphosyntactic devices that certain type of languages use.[5]

I will make an initial distinction of *initial (non-continuous) contact* versus *continuous contact* based on earlier notions that, to the best of my knowledge, go back to the work of Ken Hale on verbal alternations (e.g., Hale and Keyser, 2000, 1993, and much other earlier body of work). This distinction would be reflected in the contrast in (3):

(3) a. Jane kicked/threw the ball < initial (non-continuous) contact
b. Jane pushed/carried the box < continuous contact

In (3)a. Jane only gets into contact with the ball initially, but that contact does not continue and the ball moves on its own without Jane. In (3)b., however, Jane and the box are moving together along the same path,[6] thereby the *continuous* contact. This distinction, as many of those that will be presented next, is obscured in English but nevertheless visible, both morpho-syntactically and structurally, in other languages with the ability to represent internal structural pieces in more detail, as we will see in the rest of this paper.

Within the continuous contact category, we wanted to also explore different ways in which agents could engage with the undergoer argument and, more interestingly, with the motion vector (the actual path). In that sense, we distinguish predicates where the agent engages in the path of motion, the motion vector, together with the undergoer, from cases in which it doesn't:

(4) a. John took the child to the doctor
b. Jane took/moved the ball from the center of the table to the edge of the table

In (4)a., John and the child, agent and undergoer, are moving together along the same path, while in (4)b. the undergoer (the ball), is moving along the motion vector (which goes from the center of the table to the edge of the table), but Jane the agent is not moving (she may be sitting): the agent does not engage in the motion vector (though a body-part of the agent does).

Furthermore, each of the cases in (2) can be further subdivided: first, when agent and undergoer participate in the same motion vector, they can do so as independent entities or as one, the undergoer, as a *sub-servient* to the other, the agent. This is the contrast in (5):

(5) a. John took the child to the doctor (=4a)
b. Jane carried the duck in her arms

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[5] Probably languages that are more analytical in their structural solutions, but this is left for further thought down the road.

[6] *Push* in English is actually ambiguous: it can be used for initial non-continuous contact as well as for continuous contact. The literature on the issue of *push the cart* usually is about the second interpretation.

In (5)a (=4a), John and the child engage in their own sub-motion vector (think of them walking side by side), which run parallel to each other in what could potentially be seen as a larger single motion vector. However, in (5)b the duck does not engage in its own path, it is *sub-servient* to the motion vector of the agent, it is moving *by-virtue-of* its continuous contact with the agent.

The second subdivision concerns (4)b, where the agent does not actually move along the motion vector of the undergoer. In this case we can contrast cases where the undergoer participates in its own motion vector, from cases where the undergoer does not engage in a change of location (that is, its *eigenplace*, to use Svenonius' (2008) term, does not change) but rather in a change of *position* or *disposition*:

(6) a. Jane took/moved the ball from the center of the table to the edge of the table (=4b)
b. John raised the child (from a crouching to a standing position)

In (6)a (=4b), the ball does change locations in space. In (6)b, however, the child does not change locations in space, rather the motion involves a change of posture which could be called *disposition*. That change, it could be claim, creates a motion vector but not one that involves change of its *eigenplace*. (think of what could be identified as the *core* of the undergoer, whether animate or inanimate).

The table in (7) summarizes these distinctions.

(7) Agent and undergoer interactions with a motion vector

	Non-Continuous	Continuous			
Agent + UG	[-]	[+]			
Agent +/-		Agent involved in motion vector [+]		Agent NOT involved in motion vector [-]	
UG +/-		UGr on m-vector [+]	UGr NOT on m-vector [-]	UGr on m-vector [+]	UGr NOT on m-vector [-]
Name		*Parallel Paths*	*By-virtue-of*	Put	Orientation Change
Examples		(5a)	(5b)	(6a)	(6b)

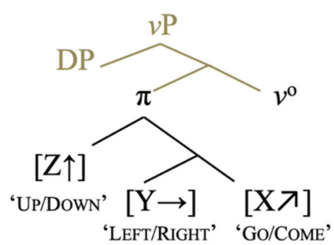
All these sub-types have been found to trigger morpho-syntactic distinctions across different languages, different along geographical and typological divides. However, the cutting line is not always the same. It is the goal of this paper to examine these distinctions in the ASL dataset obtained out of the stimuli in 2.4 and to provide a structural response to the behavior observed.

2.3 The structure: predicate subeventive decomposition in the syntax.

In this paper we follow the subeventive predicate structure proposed in Benedicto-Branchini-Mantovan (2015 and ff). In that work, a structural proposal was made to account for languages that used serial verb constructions to syntactically encode the different (subeventive) components of a motion predicate. The structure proposed follows the spirit of earlier larsonian structures (Larson, 1991) and a line of subsequent structural (sub-)eventive decomposition approaches (such as, e.g., Borer's 1994, 2005 and Ramchand's 2008).

in Benedicto-Branchini-Mantovan (2015 and ff), a core *process* subeventive structure was proposed encoding the motion vector (the actual path). In particular, that work proposes a *vectorization substructure* (π), under little *v*, where three syntactic heads (each representing a spatial axis: vertical, horizontal and deictic) configure a 3D-system in a Cartesian Coordinate System thereby defining the *motion vector* or 'arrow' of the displacement:

(8) (Serial) subeventive structure for motion vector. [Benedicto-Branchini-Mantovan, 2015]



Each syntactic head (Z, Y and X) encodes a particular value for its corresponding spatial axis. The recursive head-merge underlies a specific composition rule that derives the particular motion vector (e.g., up-rightward-away).[7] The path structure π is merged to a *v* head,[8] which introduces the internal argument. In that way, the DP merged into its Spec becomes the internal argument of the whole series.

Though this substructure was proposed to account for the use of space in sign languages, it also interestingly accounts for spoken languages that use the *serial verb* option, such as Mayangna:[9]

(9) Mayangna (Benedicto-Salomon, 2014a)

kâma	tât	munah	*kil*	*yaklâ*	*kiu*na
iguana	board	through.P	go_up.ø	cross.ø	go.PST3S

'The iguana went up (through) the board across [the creek].'

In (9) we can see how the three spatial axes are specified by three independent verbal heads in a series, where only the last one carries the finite clausal inflection: *kil* (vertical), *yaklâ*

[7] See Benedicto and Salomón (2014a,b) for how to calculate the intersective meaning of this recursive head merging, since regular compositionality mechanisms do not yield the vector denoted.

[8] The nature of this *v* associated with the internal argument implies a split *v*P which we will address later in section 3.1. In addition, whether *v* is left-headed or right-headed is a language-specific property.

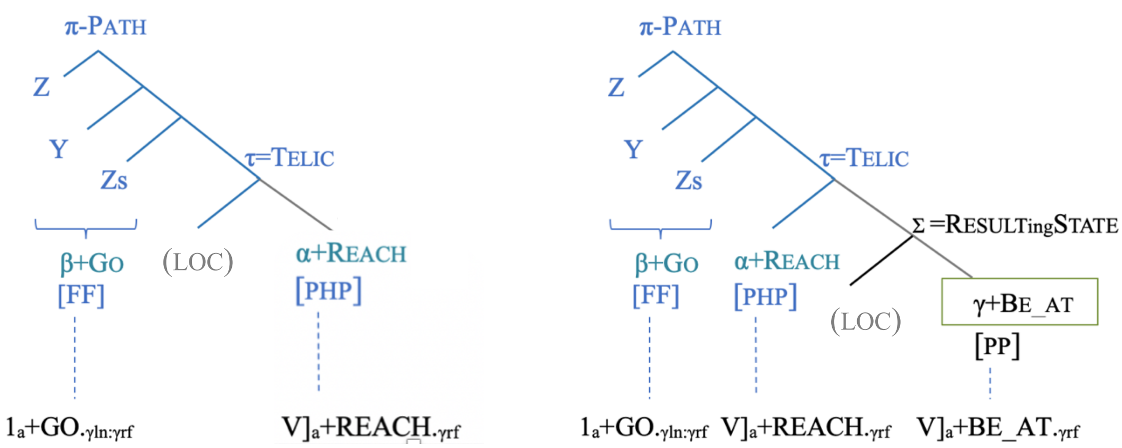
[9] Interestingly and for reasons not yet completely understood (but see Chen, 2021), the order of head merge seems to be, crosslinguistically, the same one represented in (8).

(horizontal), *kiu-* (deictic). Languages like Mayangna specify each of the three spatial planes with a verbal base to produce a fully specified 3D-π (path) *vectorization* structure (Benedicto and Salomón, 2014a,b); sign languages also use a fully specified 3D-π sub-structure, which yields the shape in space of the movement signed. However, crosslinguistically, we can observe a certain level of variation, with languages only allowing two heads for π (e.g., Mandarin) and others (like Romance languages) only allowing one. The reasons for this parametrization are the object of current research (cf. Taherkhani 2019, Osei-Tutu 2019, Chen, 2021, Zheng 2015).

Additionally, in further building the structure for the subeventive decomposition of motion predicates, a Telic substructure can be merged with this *vectorization* π substructure to yield a telic interpretation; and (optionally) a Result$_{ing}$State substructure can also be merged to the Telic substructure to yield a telic-resultative structure, as in (10)a. and b., respectively.[10]
In sign languages, each (functional) head involved can host a Classifier morpheme (as per Benedicto 2018b), represented in the structure in (10) by $\alpha+, \beta+, \gamma+$ with an example of an output element for (10)b. below, corresponding to the example in (11). We return to this point in section 4.1.

(10) Telic and Result$_{ing}$St. Structures [from Benedicto-Branchini-Mantovan, ms, 40, 48']

a. b.



Though it has been common to assume that telicity comes as a result of a Result substructure (see, e.g., Ramchand 2008), there is crosslinguistic evidence that telicity and result can be separate components. We will not devote time to this here, but a couple of examples follow for this split, from a sign language (LIS) and from a spoken language (GSP, Ghanaian Student Pidgin), with the corresponding elements in bold:

(11) LIS (from Benedicto-Branchini-Mantovan, ms, 57b)

	FF	PHP	PP
H1:	1_a+GO.$_{\gamma ln:\gamma rf}$	V]$_a$+**REACH**.$_{\gamma rf}$	V]$_a$+**BE_AT**.$_{\gamma rf}$
H2:	$5)_b$+BE_AT.$_{\gamma rf}$--		

‘[the bird]... goes (all the way up) to the trees perching on them.’

[10] Tests to support the lower merge of the telic and result substructures are provided in Benedicto et al (2019) and are based on c-command properties of the structure (such as the licensing of bound variable relations).

(12) Ghanaian Student Pidgin, GSP (Osei-Tutu 2019 [105])

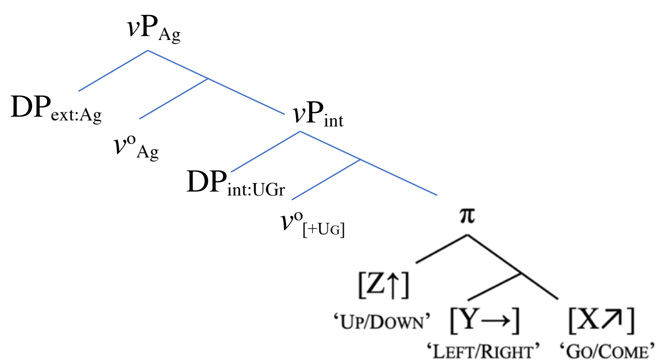
The	bird	fly	come	**catch**	the	tree	**tap**	im	branch
D	bird	fly	come	reach	D	tree	sit	3SGPD	branch

‘The bird flew (all the way) to reach the tree and sat on its branch.’

In (12) we can observe semi-grammaticalized serial verbal forms for the telic substructure (*catch*) and for the Resulting State (*tap*), parallel to +REACH and +BE_AT found in the LIS example of (11).

This approach follows closely larsonian proposals for serial configurations (Larson, 1991, and also Ramchand, 2008). For the upper layers of structure, crucial for our understanding of agents in serial motion predicates, we will adopt a split *v*P approach, along the lines of Benedicto and Brentari (2004), with a lower *v*P introducing the internal argument or undergoer, as in (8) above, and a higher *v*P for the external agent, yielding the structure in (13), to which we return in 4.1:[11]

(13)



In this paper, we will focus on the relation between the upper v_{Ag}P and the lower v/π-substructure (that is, the relation between the agent and the undergoer, and the agent and the motion vector of π) and how that relation can potentially underlie the different agent subtypes laid down in Table (7) in section 2.2. We will address these points directly in section 4.

2.4 The stimuli

The data for this paper are part of a larger data set obtained from a stimuli set designed to qualitatively obtain minimally contrastive data about path (motion vector), telicity, resulting state and agentivity in motion predicates. The stimuli, in the shape of animated videoclips, were created by the Envision Center at Purdue University and are packaged in an app that randomly groups the individual videoclips in seven series (Benedicto, 2019). The app is self-paced, and participants are instructed to ‘say what happens.’[12]

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[11] Benedicto and Brentari (2004) use f_1P and f_2P (*f* for ‘functional’ head), but the specific nature of those heads can be directly correlated to v^{o}_{Ag} and v^{o}_{UGr} respectively.

[12] It is important to state, as we have done at the beginning of this work, that the use of this type of instrument does not imply an experimental design nor is it meant to be used to create a quantitative analysis of the data. The goal is, not to find out about frequency or preference of use (though such approaches are not necessarily ruled out by the design of the tool itself), but to provide a formal analysis that uncovers the deep Grammar, the structural properties, of the language and, eventually, of the human Faculty of Language. The prompts are, thus, used as tools for elicitation,

Out of the 175 of total prompts, 87 correspond to agentive video-clips paired with their corresponding non-agentive counterparts. In addition, each of the contrasts established in 2.2. (see Table in (7)) are represented within the agentive subset: 50 correspond to non-continuous contact, whereas 37 correspond to continuous contact . These are some contrasting examples:

(14) Stimuli sample by Agent type.
a. Type 1. Non-continuous contact

Bottle push

father-child slide-push

b. Type 2. Continuous contact

2a. Agent and UGr on m-vector

father-child slide-take

2b. UGr not on Agent's m-vector

child-goose

2c. UGr on m-vector (not Agent)

Bottle take-down

2d. UGr and Agent not on m-vector

father-child up

Each of those prompts is paired with a non-agentive (unaccusative) counterpart to better evaluate the additional structure used to represent the agent.
For the ASL data set, three native signers were video-recorded (by another signer) from two different angles, a front one and a second one at 45º. The recordings were synchronized and adjusted to prepare them for ELAN. ELAN files were created for transcription and coding of the relevant features.

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which can be later supplemented by a qualitative follow up of the type that is normally used in (more traditional) field work, where subtleties are discussed with a speaker/signer.

3. Structural patterns of agent encoding in motion predicates

In this section we present the findings in the form of structural morpho-syntactic patterns that have been found about agentive structures in motion predicates arising out of the dataset obtained from the stimuli described in 2.4.

A clarification note is in order first. As stated in section 1, motion predicates in sign languages are heavily represented by classifiers morphemes (though not uniquely so). The discussion below, thus, will necessarily be heavily centered around the role of classifiers in these predicates, with their specific structural role being discussed in section 4. Generally speaking, handling classifiers (HDL-) have been associated to transitivity, that is, to the presence of an external argument.[13] Benedicto and Brentari's (2004) analysis in particular makes these morphemes responsible for introducing an agent. They provide a formal syntactic analysis for these classifiers locating them in a functional syntactic head akin to an agentive v^o, v^o_{Ag}, within a split vP structure as represented in (13) above (with both a lower v^o associated with the internal argument, $v^o_{int:UGr}$, and an upper v^o associated to the external argument);[14] they also associate body-part classifiers (BP-) to that same v^o_{Ag} syntactic head (and, thus, also introducing an agent) and establish that those external arguments, of both handling (HDL) and body-part (BP) classifiers, are in fact agents, and only agents. Other types of external arguments (such as those associated with alternating elements like BOIL and MELT in ASL) are indeed ruled out and they cannot cooccur with either HDL- or BP-classifiers. So, if both HDL- and BP-classifiers are responsible for introducing an agent, is there a difference between them?

In section 3.1 below we talk about precisely that difference between structures with HDL-classifiers and structures with BP- classifiers, linking them to the [+/- continuous] distinction in Table 7. In section 3.2 we further discuss the structural variation in morphosyntactic patterns for the [+continuous] type and in section 3.3 we address any potential correlation between the types in Table 7 and the morphosyntactic patterns uncovered in section 3.2. Structural representations for all those patterns will be addressed in section 4.

3.1. The [+continuous]/[-continuous] contrast.

The first inkling that HDL- and BP-classifiers are correlated with the [+cont]/[-cont] contrast appears in Benedicto et al (2016), in the context of a general description of the components of motion predicates in sign languages, in particular, in three different sign languages (LIS, HKSL and ASL): predicates with HDL-classifiers encode agents in continuous contact with the undergoer [+cont], whereas predicates with BP-classifiers encode agents with only initial, non-continuous contact with their undergoers [-cont] (the first contrast in Table (7)). Both of these classifiers, HDL- and BP-, are observed in Serial Verb Construction structures, and in section 4 we will see how they can straightforwardly be accounted for by the Benedicto-Brentari (2004)-based v^o_{Ag} / v^o_{UGr} split structure in (13).

Here are some examples (related to prompts 0704/0706 shown in (14)a.-b. above):

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[13] See Schick (1987), Kegl (1990), Janis (1992) and Zwitserlood (1996) for proposals of a 2-argument structure for handling classifiers, and Janis (1992, p. 358), in particular, who argues for classifiers as portmanteau forms with both an agent and a theme or instrument.

[14] As mentioned earlier, Benedicto and Brentari's (2004) f_1P and f_2P can be straightforwardly correlated to v^o_{Ag} and v^o_{UGr} respectively.

(15) The [-cont]/[+cont] Contrast with HDL- and BP- classifiers.[15]

a. [-cont]: BP-classifier [0704-ASLkq]

v^{o}_{Ag} v^{o}_{UGr}

H1. … (FATHER).a (CHILD).b V-bnt$_{WE.b}$+BE_AT __________ V-bnt$_{WE.b}$+SLIDE-DOWN.π
H2. … B$_{BP.a}$+PUSH.b

'The father pushed the child down the slide'

b. [+cont]: HDL-classifier [0707-ASLem]

v^{o}_{Ag} v^{o}_{UGr}

H1. … (FATHER).a (CHILD).b C-C$_{HDL.a}$+HOLD-GO-DOWN.π V-bnt$_{WE.b}$ +SLIDE-REACH.π
H2. … (SLIDE).c C-C$_{HDL.a}$+HOLD-GO-DOWN.π B-fl$_{WE.c}$+BE_AT

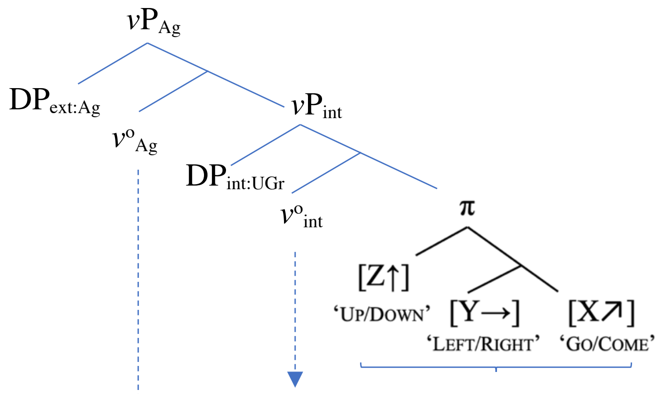
'The father is holding the child down the slide all the way to the ground' [cf. (12)b.-2a]

In (15)a., after setting the participants in space, the BP-classifier predicate, B$_{bp.a}$+PUSH.b, with handshape B and articulated on the non-dominant hand H2, encodes a [-cont] agent that sequentially precedes the undergoer-related motion subeventive component V-bnt$_{we.b}$+SLIDE-DOWN.π articulated on the motion vector path represented by π. The sequence of these two predicates (B$_{bp.a}$+PUSH.b and V-bnt$_{WE.b}$+SLIDE-DOWN.π) constitutes a typical example of serial verb construction, quite parallel to the example from Edo provided in (2).
In (15)b., on the other hand, the utterance for the minimally contrasting prompt of 0707 (see (12)b.) includes, not a BP-classifier, but a HDL-classifier, C-C, articulated with both hands and preceding the undergoer-related motion subeventive component V-bnt$_{we.b}$ SLIDE-REACH.π. The interpretation for this one, correlated with the presence of the HDL-classifier, is that of a [+cont] contact agent (the father is in permanent contact with the child as the child slides down the slide, with the father moving along). This example too instantiates a prototypical case of a serial verb construction, with the two predicates (C-C$_{HDL.a}$+HOLD-GO-DOWN.π and V-bnt$_{WE.b}$ +SLIDE-REACH.π) in sequence.

Now, the question is how those two interpretations, [+cont] and [-cont], are derived from the structure in (13). If we use that structure, the BP- [-cont] type can be straightforwardly derived, with each *v*-head independently spelling out a classifier (the BP-, B$_{BP.a}$, in v^{o}_{Ag} and the W/E, V-bnt$_{WE.b}$, in v^{o}_{UGr}), as in (16) below for (15)a. above:[16]

[15] Examples will include the relevant portion in black, with the rest in dark grey to facilitate focus on the relevant part of the example. As already stated in section 1, classifier predicates are transcribed in two parts separated by a "+" sign. Before the "+" sign appears the transcription for the handshape of the classifier (C-C$_{HDL}$.a+__) using numbers or letters that share the same handshape; the subscript in the classifier ($_{HDL}$ in "C-C$_{HDL}$.a+__") refers to the type of classifier (handling, body part, whole entity…) and the index (.a in "C-C$_{HDL}$.a+__") reflects the coindexation with the corresponding argument. After the "+" sign appears the transcription for the movement of the sign (the eventive component), with π indicating the motion vector.
[16] In that example, all arguments have, as usual, been topicalized and appear at the very beginning of the utterance. Locations in space are used to indicate indexical identity.

(16)



H1. … V-bnt$_{we.b}$ +SLIDE-DOWN.π

H2. … B$_{bp.a}$+PUSH$_{.b}$

'The father pushed the child down the slide'

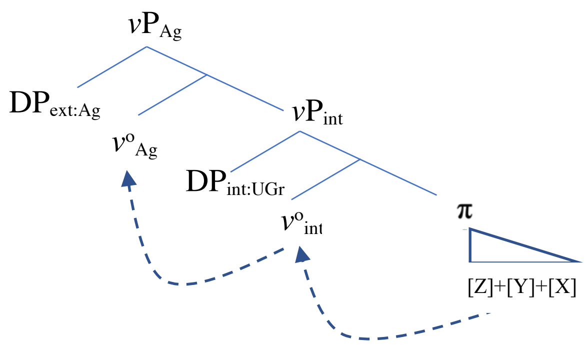
Later on, in Benedicto (2016, 2017), three further observations are made, relevant to the [±cont] distinction: one, that the HDL-, as opposed to the BP-classifier, is articulated on the motion vector (π), the path of the motion being signed; two, that the second predicate in the serial construction is systematically represented by a *whole entity* (W/E) classifier (which in Benedicto and Brentari 2004 was associated to unaccusative predicates);[17] and three, that the [+cont] pattern has in fact 4 different subpatterns. Let us first address the first of those three observations, namely the HDL-articulation on the motion vector (π); we will address the others in section 3.2

We can understand HDL- classifiers' 'articulation on the motion vector or m-vector' as the agent participating of the same motion vector as the undergoer (the undergoer being the argument that 'undergoes' the motion itself); if so, then it follows that agent and undergoer stay in contact, a contact that has already been established in the denotation of the HDL itself. How can this intuition be represented structurally? One straight possibility is by moving π (the complex head structure corresponding to the motion vector we saw in (8)) to the head hosting the agentive HDL-. Since π is not strictly adjacent to v_{Ag}, then successive head movement through the lower v^{o}_{UGr} needs to happen,[18] as in (17) below:

[17] This fits well with locating the W/E V-bnt in (15)a under in v^{o}_{UGr} as is shown in (16). The W/E classifier V-bnt is associated to the internal argument, as expected.

[18] How much of this is actually encoded *in fire* in the actual syntactico-semantic structure and how much can be derived in some other way is an empirical matter. I suspect that establishing the contact between the agent and the undergoer is hard-wired into the meaning of the HDL. Deriving the contact between those two arguments via the raising of the π-structure to v^{o}_{Ag} by successive head-movement may need further support.

(17)



This structure would straightforwardly yield the interpretation that the agent is involved in the same motion vector π as the undergoer and would account for cases like (18), one of the 4 subpatterns for [+cont] we will address later. Here, as in the previous examples in (15), we begin to use -GO.π to transcribe the complex head ([X]+[Y]+[Z]) for the motion vector, an abstraction for the kinetic path on which the predicate is articulated.

(18) Single mono- [0905-ASLem]

H1. ... GIRL.a ... TRAIN.b $\text{Cdwn}_{\text{hdl.a}}$+GRAB-GO.π

H2. $\text{5dwn}_{\text{we.c}}$+BE_AT.z T-U-N-N-E-L.c ... TRAIN.b $\text{5)dwn}_{\text{we.c}}$+BE_AT.z

'the girl is taking a (toy-) train down the track towards the tunnel'

This non-SVC pattern, involving a single mono-predicate ($\text{Cdwn}_{\text{hdl.a}}$+GRAB-GO.π), with the HDL on H1 being articulated on the motion vector (while H2 articulates the tunnel, at the end of the path), can now be derived by successive head movement of π-to-v^{o}_{UGr}-to-v^{o}_{Ag}:[19] by π (the complex vectorization head) head-moving to v^{o}_{Ag} (after moving through v^{o}_{int}), it brings the motion vector on to the agent-related head. We thus derive the articulation properties of the HDL on the motion vector and the co-occurring meaning of the agent sharing the path with the internal undergoer argument (and thus, the continuous contact interpretation).

The contrast between [+cont] and [-cont] contact is, thus, reduced to successive head movement of π to v^{o}_{Ag}: if it happens a [+cont] interpretation ensues (with the correlated property of the agent-related classifier being physically articulated on the path); if successive head movement of π to v^{o}_{Ag} does not happen, the agent-related classifier is not articulated on the motion vector and the [-cont] interpretation is derived.[20]

Let us now address the morphosyntactic variation found within [+cont] cases. For ease of exposition, we will refer to the [-cont] case of (15a)/(16) as structural pattern 1 (Str-Pattern1), whereas the cases of [+cont] will be referred to as structural patterns 2 (Str-Pattern2) with further subdivisions to be dealt with next.

---

[19] The original proposals in Benedicto (2016, 2017) are about 3 sign languages, two of which, LIS and HKSL, are considered head-final, whereas the third one, ASL, is considered head-initial. This would just mean that the functional heads v^{o}_{Ag} / v^{o}_{UGr} would either be head-final or head-initial (as in (17)). In any case, it is also well-attested that when a head-final language has SVC, the non-harmonic option of a head-initial SVC, under a head-final functional head, is also a non-negligible option (see Carstens, 2002).

[20] Certain questions arise here that will be addressed again in section 5. Why can't π-raising happen when a BP-classifier is in v^{o}_{Ag}? Or alternatively, why don't we find π-raising happening when a HDL- classifier is in v^{o}_{Ag}?

3.2. The [+continuous] contrasts and variation for Str-Pattern2.

As we pointed out earlier, Benedicto (2016, 2017) identify 4 different subpatterns for the [+cont] agentives, two of which we have already seen above in (15)b and in (18). An additional pattern has been identified since. Those 5 morphosyntactic subpatterns are summarized in (19) below, with examples in (20)-(26). The subpattern we discussed in (15)b corresponds to (19)b. and the subpattern in (18) corresponds to (19)a, with the examples repeated in (20-21) for completeness. Again, as before, -GO.π is an abstraction representing the complex head for the motion vector, the path trajectory, generated by substructure-π.

(19) Str-Pattern2: [+cont] Agent subpatterns

a. Single, mono-: HDL.AG+ -GO.π
   A single HDL- agent-related classifier articulated on the motion vector (-GO.π), the path of the trajectory.

b. HDL-W/E: HDL.AG+ -GO.π **>>** W/E.UGr+-GO-REACH.π
   A HDL- agent-related classifier, articulated on the path π, the motion vector (-GO.π),
   followed by a W/E UnderGoer-related classifier also articulated on the same path π, reaching an endpoint.

c. Sandwich: **HDL.AG**+-GO.π >> W/E.UGr-(-W/E.π) +-GO.π >> **HDL.ag**-(W/E.π)+-GO.π
   A HDL- agent-related classifier, articulated on the path π,
   followed by an UnderGoer-related W/E classifier,
   followed by, again, the HDL- agent-related classifier articulated on the same path π.
   (H2 may accommodate an optional W/E- *via*-related classifier)

d. Co-articulation: HDL.AG+-GO.π >> HDL.AG-W/E.UGr+-GO.π
   A HDL- agent-related classifier, articulated on the path π,
   followed by a combined co-articulation of two classifiers, one on each hand: a HDL- coindexed with the agent and a W/E coindexed with the UnderGoer, both articulated on the motion vector (-GO.π). The UGr-related W/E may be separate from (not in contact with) the HDL-classifier, or both hands may be in contact.

e. Seq-Path2: HDL.AG_j- >> W/E_j +-GO.π.
   A HDL- agent-related classifier articulated (optionally) on the motion vector π,
   followed by a W/E classifier coreferential with the agent argument, articulated on the motion vector π; the other hand, in the meanwhile, can continue to articulate the initial HDL or articulate the locative ('ground' or goal/telos).

Here are some examples illustrating the 5 sub patterns:

(20) Pattern 2a.: Single mono- [0905-ASLem]

H1. … GIRL$_{.a}$ … TRAIN$_{.b}$ Cdwn$_{HDL.a}$+GRAB-GO.π
H2. 5)dwn$_{WE.c}$+BE_AT.z T-U-N-N-E-L$_{.c}$ …TRAIN$_{.b}$ 5)dwn$_{WE.c}$+BE_AT.z
'the girl is dragging the (toy) train down to the tunnel'

In (20) we can see how there is a single verbal form with an agent-related HDL- classifier, Cdwn$_{hdl.a}$+___, articulated on the motion vector, the path (-GO.π), while the non-dominant hand H2 articulates the classifier for the tunnel, the goal in an atelic predicate.

Let us now look at the second subpattern, 2b:

(21) Pattern 2b.: HDL-W/E [0707-ASLem]

H1. … (FATHER)$_{.a}$ (CHILD)$_{.b}$ C-C$_{hdl.a}$+HOLD-GO-DOWN.π V-bnt$_{we.b}$ +SLIDE-REACH.π
H2. … (SLIDE)$_{.c}$ C-C$_{hdl.a}$+HOLD-GO-DOWN.π B-fl$_{we.c}$+BE_AT
'the father is holding the child down the slide all the way to the ground' [cf. (12)b.-2a]

In this case, (21), we see again an initial agent-related HDL- classifier form, C-Chdl.a+__, articulated on the motion vector (-GO-DOWN.π), followed by an undergoer-related W/E- classifier, V-bnt$_{we.b}$ +___, associated with the telic substructure of (10)b (REACH.π).
The third subtype (2c) is what we call a *sandwich*:

(22) Pattern 2c.: Sandwich [0610-ASLem]

H1. BOY$_{.a}$ DUCK$_{.b}$ … 5)$_{HDL.a}$+HOLD 1]$_{WE.b}$+-GO.π 5)$_{HDL.a}$+HOLD-GO.π
H2. 5)$_{HDL.a}$+ HOLD --------- 5)$_{HDL.a}$+HOLD-GO.π --- ------------------------
'the boy holds the duck going away'

In (20) we see a classical instance of a 'sandwich' pattern: the agent-related HDL- classifier (5)$_{HDL.a}$+__) appears before and after, *sandwiching* the undergoer-related W/E- classifier, 1]$_{WE.b}$+GO.π, in the middle. Notice that while H1 is articulating the W/E- classifier, H2 retains the HDL- handshape which will continue on the second part of the *sandwich* (indicated, as usual, by the "------" sequence), all the while being articulated on the motion vector (-GO.π).

Next, we see an example of the fourth subtype (2d.), identified as the *co-articulation* pattern:

(23) Pattern 2d.: Co-articulation [0620b-ASLem]

H1. BOY$_{.a}$ DUCK$_{.b}$ … 5)$_{HDL.a}$+HOLD 1]$_{WE.b}$+-GO.π
H2. 5)$_{HDL.a}$+HOLD --------- 5)$_{HDL.a}$+HOLD-GO.π
'the boy holds the duck going away'

In (23), we see what could be conceived of as a cross between a subset of the *sandwich* pattern in 2c and pattern 2b: the initial 2-handed agent-related HDL- classifier is followed by an undergoer W/E classifier, articulated by H1, while at the same time H2 keeps articulating the first initial HDL-. While both W/E- (1]$_{WE.b}$+-GO.π) and HDL- (5)$_{HDL.a}$+HOLD-GO.π) are simultaneously articulated on the same motion vector (__+-GO.π), they are not strictly speaking in contact, rather they are being articulated side by side. However, there are a number of subcases here where H1 and H2 are indeed in contact; the following is one such case:[21]

(24) Pattern 2d.: Co-articulation (with hand-contact) [0610-ASLsn]

H1.	BOY.a DUCK.b ...	$5)_{HDL.a}$+HOLD	$5)_{HDL.a}$+HOLD-GO.π
H2.		$5)_{HDL.a}$+HOLD ---------	$2>_{WE.b}^{5)}$+-GO.π

'the boy holds the duck going away'

In (24), the H2 articulates the undergoer-related classifier $2>_{WE.b}^{5)}$+__ on top and inside of the H1 articulating the agent-related HDL- classifier $5)_{HDL.a}$+__, while on the path π.
Whether this distinction (H1 and H2 articulated side by side or in contact to each other) is bound to be significant or not will need to be decided at a later point.

Finally, here's an example of subpattern 2e., a sequence where the classifier of the second component is not co-referential with the undergoer argument as in the cases above, but with the argument of the agent-related initial HDL- :

(25) Pattern 2e.: Seq-Path2 (~Agent) HDL.AG_j- >> W/E_j +-GO.π.

[0610-ASLkq]

H1.	BOY.a	DUCK.b	$5)_{HDL.a}$+GRAB-HOLD	$Bfl_{WE.c}$+BE_AT.z
H2.	$1_{WE.a}$+ BE_AT.w		$5)_{HDL.a}$+GRAB-HOLD	$1_{WE.a}$+GO-TO.π

'There is a boy that holds a duck, goes away (towards the horizon) '

Here, the HDL- classifier $5)_{HDL.a}$+GRAB-HOLD is articulated in its body location, while the second classifier, $1_{WE.a}$+GO-TO, co-referential with the argument associated with HDL-, is articulated on the motion vector (.π). That is, the argument associated with the carrying is the same as the argument associated with the going (whereas in the previous cases, the arguments associated with the carrying and the going were two different ones). The H2 in the meanwhile articulates the ground (locative).
As in the case before, there are some instances where the H2 actually keeps articulating the first HDL-, simultaneously to the W/E. This is an example

(26) Pattern 2e.: Seq-Path2 (~Agent) HDL.AG_j- >> W/E_j +-GO.π. (with HDL-)

[0621-ASLsn]

H1.		DUCK.b	$5)_{HDL.a}$+ HOLD	$5)_{HDL.a}$+ HOLD
H2.	BOY.a	$Vdwn_{WE.a}$+ BE_AT.w	$5)_{HDL.a}$+ HOLD	$Vdwn_{WE.a}$+GO-TO.π

'A boy standing there, holds a duck, comes near while holding it.'

In this case, the HDL- $5)_{HDL.a}$+ is articulated on its body location and retaken later (H1 goes on rest for a short moment) as the second classifier, $Vdwn_{WE.a}$+GO-TO.π, is articulated on the motion vector. We will discuss the nature of the $Vdwn_{WE.a}$+__ classifier in section 4. And, again, whether this variation on H2 (articulating either the ground or a continuation of the initial HDL) is of structural significance will be dealt with at a later point.

[21] I have used this notation to indicate contact of the two classifiers: a superscript "5)" on the W/E classifier $2>_{WE.b}^{5)}$+__, to indicate $2>_{WE}$ (coindexed with DUCK.b) is articulated on the location of HDL- classifier 5).

In section 4, we will address how to deal with the structural representation of these morphosyntactic patterns that we have identified here in section 3.2. In the meanwhile, a note about the correlation of these patterns and the conceptual types in Table (7) is in order.

3.3. A note about the correlation between Table 7 and Str-Patterns2.

In Table (7) we identified a series of conceptual subtypes of agents, depending on their relation to the undergoer and the motion vector itself. Given the morphosyntactic patterns we have seen above, the question arises as to whether there is any correlation between the conceptual agentive subtypes in (7) and the morphosyntactic subpatterns in (19). The answer, in as much as we can establish now, is that, for the most part, there is no correlation that we have been able to identified. All the subpatterns appear as a response to all subtypes in (7), with the exception of subpattern 2e. All signers use all the subpatterns and, though there may be some *preference* detected in a more frequent use of one or another subpattern in the productions of certain signers, they all produce all the subpatterns (by which we assume any given signer has access to the grammar generating that subpattern, whether they *prefer* to use it or not). Furthermore, for any given prompt or stimuli, as described in section 2.4, there seems to be a full range of morphosyntactic subpattern use; there are, however, certain absences that are of interest: the 2e pattern (SeqPath2) in (19)e. and examples (25)-(26) seems to be absent, for instance, in productions from stimuli series[22] where there is no displacement on the part of the agent. This is of course of no surprise since subpattern 2e is precisely about the displacement of the agent and there is no agent displacement there.

4. The structure and the operations yielding the subpatterns for [+cont]

In this section we address the structural representation of the patterns identified in Section 3 for [+cont] agents, with an eye to providing an explanatory solution to the variety of syntactic strategies observed there that can, in turn, also illuminate how the underlying derivation represents the conceptual relation between the agent, the (vectorization of the) trajectory and the undergoer argument.

The general approach that we propose is that the specific derivational pattern observed is the result of (i) the specific Numeration set that enters that particular derivation, (ii) the complexity of functional heads that derives from the Numeration and (iii) the computational operations that build the eventive sub-structure to yield a successful derivation.

First, we lay out our specific theoretical assumptions (4.1), leading into the formulation of the structural hypothesis underlying the patterns observed (4.2) and finally (4.3) we delve into the technical details of how our hypothesis yields each of the observed patterns.

---

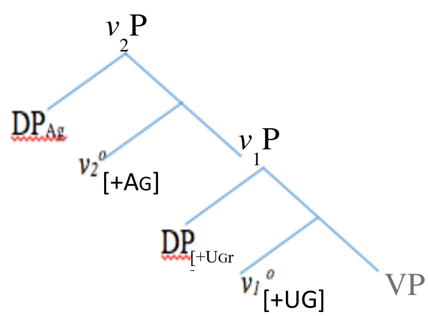
[22] This would correspond to column 6a in Table (7). An example of that is series-13 of the stimuli which involves a child being lowered from, or raised to, a tree branch, in a vertical path. The agent in that case is sitting on the branch and does not move from it.

4.1 Assumptions

Our analysis relies on a set of four basic, mostly standard theoretical assumptions about how structures are built.

First, we assume, as it has generally been assumed, that agents, as external arguments in general, are introduced by a dedicated functional head, *little v* (an older idea that takes shape under Kratzer 1996, Chomsky 1995). Second, as we already mentioned (section 2.3), we adopt a *v-split* version of *little v*, with a lower *v* ($v_{1[UG]}$) dedicated to introducing the internal argument[23] and a higher *v* ($v_{2[Ag]}$) dedicated to the agent itself, as in (27) below, repeated from (13). This split (an idea whose fundamentals, to my knowledge, go back to Borer 1994, 2005) has been proposed in the literature in different flavors and realizations, for both spoken languages (e.g., beyond Borer, 1994, 2005, Ramchand, 2008, Harvey, 2013 among many others) and sign languages (Benedicto and Brentari, 2004; Benedicto, Branchini and Mantovan, 2015).

(27) *v*-split



Third, we assume the syntactic decomposition of subeventive structure at the level of the VP (along the lines of ideas originating in Borer 2005 and Ramchand 2008). In the case of motion predicates, in particular, we follow Benedicto, Branchini and Mantovan (2015) and assume that motion predicates are formed by a core PATH substructure (π) encoding the *vectorization* of the displacement, as discussed in 2.3 earlier; if only that substructure is present in the derivation, an atelic interpretation arises. Optionally, the PATH substructure (π) can be merged with a telic REACH (τ) substructure, in which case the resulting structure yields a telic interpretation.[24] In (28) below, __+-GO is used as an (abstract) shortcut for the complexity of the π- vectorization: [25]

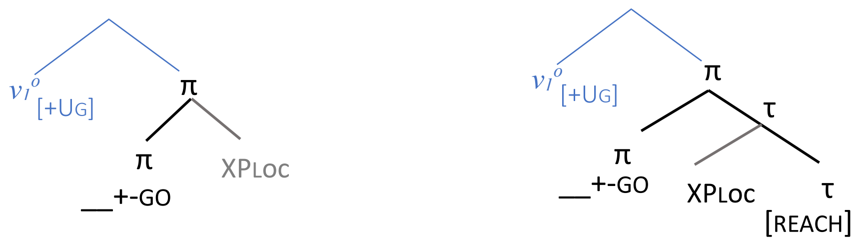
[23] As already established in section 2.3, we follow Ramchand 2008 to use this more encompassing label, to include both *Patients* and *Themes*.

[24] Evidence for the existence of this *larsonian*-style complement structure is provided in detail in Benedicto, Chen, Osei-Tutu and Taherkhani (2019). See also Chen (2021) for how to adapt this complement structure to Borer's (2005) structural proposal of telicity, which permits to account for other factors that can also trigger telicity (on this issue, see also Chen (2020) on subevent verbal classifiers in Mandarin).

[25] See section 2.3 for specifics on the vectorization structure (and Benedicto and Salomón 2014 for further details). Here, in this section, we obviate all those details and refer to π as __+-GO, with '___+-' as a place holder for the potential classifier handshape.

(28) VP sub-eventive structure for Motion Predicates

a. Subtree with only vectorization π (atelic) b. Subtree with π and τ (telic)



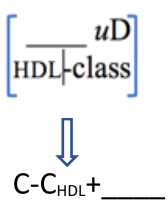
Finally, we assume the formal analysis of verbal classifiers in Benedicto (2018). In particular, that work proposes that classifier morphemes (handshapes) encode a feature cluster formed by an α-CLASS feature together with an uninterpretable D-feature (*u*D), as in (29) below:

(29) Classifier morpheme structure

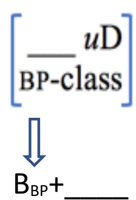
$$\left\{ \begin{array}{l} u\,\underline{\quad}\mathrm{D} \\ \alpha\text{-}\mathrm{C}{\small\mathrm{LASS}} \end{array} \right\}$$

The α in α-CLASS refers to the specific value of the classifier within the paradigmatic[26] range across classifier morphemes types (whether HDL, BP, WE, etc…):

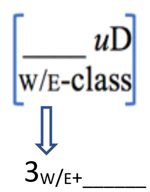
(30) a.



b.



c.



Under this view, classifiers are the linguistic units that contain morphemic CLASS information (e.g., [2D-square], [vehicle], …) that is transferred to the DP they are coindexed with,[27] and in that sense they constitute a different phenomenon than traditional *agreement*. The *u*D feature will be responsible for this coindexation, as we will explain next.

The cluster formed by {α-CLASS, *u*D} freely bundles up with any contentful functional head in the clausal functional spine (see also Benedicto 2002, 2004); this predicts the crosslinguistic range of well-attested functional meanings associated with verbal classifiers,[28] as represented in (31), with some languages illustrating the different options:

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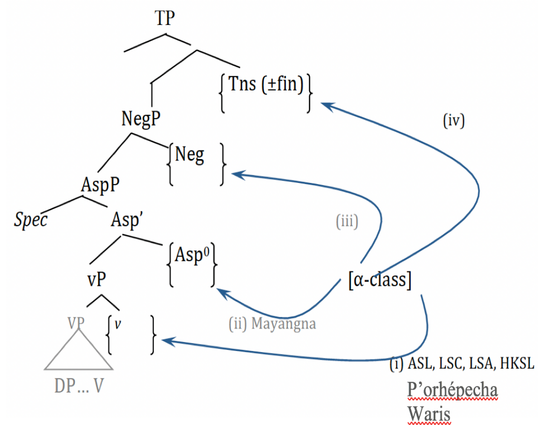
[26] The paradigmatic nature of classifier morphemes means that classifiers belong to a functional class and that, no matter how long, their range is a closed class. In that sense, CLASS belongs to the range of functional elements associated to DPs (such as Quantifiers, Num, Poss, etc…).

[27] See Benedicto (2018) for detailed arguments for this position and the contrast that is observed in the morpho-syntactic behavior of *agreement* phenomena and *classifier* phenomena, in particular the lack of 1-to-1 correspondence between classifier choice and DP, and the corresponding lack of ungrammaticality on the face of co-variation. Though both *agreement* and *classifier* phenomena are involved in an AGREE operation, the directionality of value transfer is the opposite in each: in *agreement* the DP transfers features to the agreeing element, whereas in *classifier*, the CLASS feature is transferred to the DP.

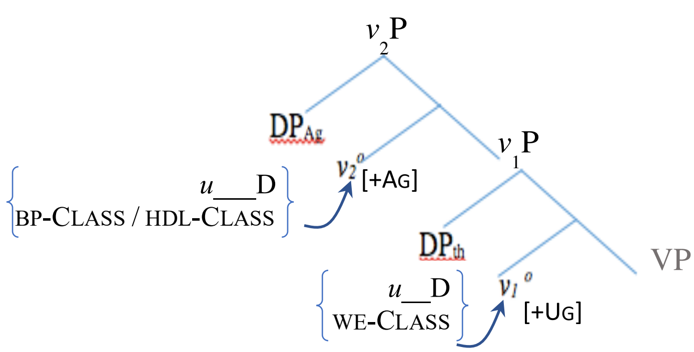
[28] See, e.g., the descriptive typological work in Aikhenvald (2000) for an illustration of all the different variation associated to verbal (and other) classifier morphemes.

(31) Range of classifier morpheme cluster's bundling up with functional Syntactic heads.



Following Benedicto and Brentari's (2004) work, we will assume that HDL-CLASS and BP-CLASS bundle up with the agentive head $v_{2[+AG]}$, whereas W/E-CLASS bundles up with the lower thematic head $v_{1[UG]}$ and lower subeventive heads (as per the structures in (10) or (28)).

(32)



As mentioned above, the uD-feature in the cluster in (29)/(30) is responsible for TARGETing the particular DP constituent that ends up in the corresponding Spec-position[29] and to which the α-CLASS featural content will be transferred.[30]

4.2 Structural Hypothesis

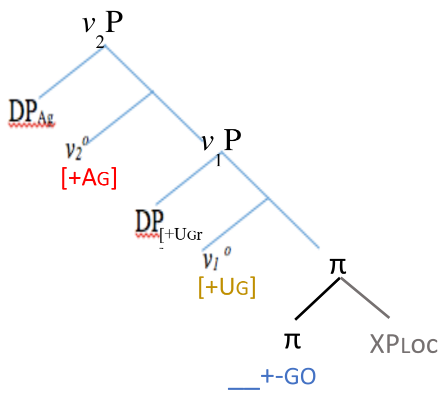
Putting together these theoretical assumptions generates two basic structures, one for telic and one for atelic events, as in (33) below, based off of (27) and (28) above. In (33a) only the PATH substructure π is generated, with an optional XPLOC indicating a potential goal that, as such, does not end up being an endpoint (thus, encoding a *displacement towards* a location). In (33b), both a π-PATH and a telic τ-REACH substructure are generated with an XPLOC that will be interpreted as an endpoint as the complement of REACH (that is, a *displacement reaching* a location).

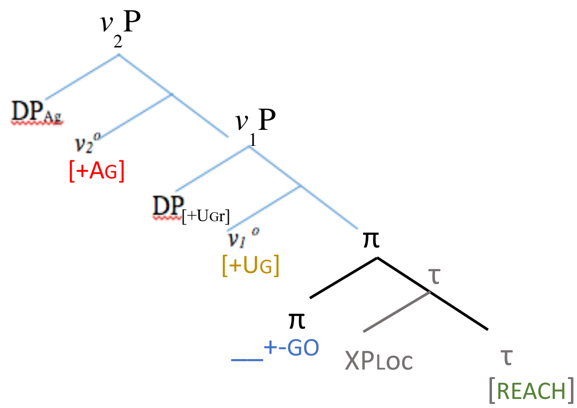
---

[29] Notice that, in a radically minimalist approach, the DP can be directly merged in that Spec position. In any case, exchange of feature values will take place in that Spec-Head configuration.

[30] For technical details on the directionality of this sharing of features (from Classifier to DP and not viceversa) and on the targeting of the particular DP, see Benedicto (2018) and fn 27 earlier.

(33) a. atelic clausal structure b. telic clausal structure





In the structures above, __+-GO stands in for the *vectorization* of the motion,[31] whereas '___+' represents the site for a potential handshape α-classifier (in the sense of 4.1 above); REACH represents the downward movement (and accompanying NMMs) that indicate arrival to a location, interpreted as *endpoint*.

Our working hypothesis will be that depending on the specifics of a particular Numeration, a certain type of complex functional heads will become available to build (depending on the number and type of α-CLASS included), and a certain number and type of syntactic operations will take place as a consequence. In other words, the structures in (33), will respond to Numerations of the type of (34) below, with the possibility of hosting one or more α-CLASS morphemes of the type in (30).

(34) a. atelic Numeration

Num *n* = { __+GO, v_2 [+AG], v_1[+UG], { ___ *u*D, α-CLASS } }

b. telic Numeration

Num *m* = { __-GO, __-REACH, v_2 [+AG], v_1[+UG], { ___ *u*D, α-CLASS } }

Therefore, the particular realization of the α-CLASS cluster in the Numeration, the type and number of them, and their interaction with the sub-eventive structure (33) will have definite consequences in the type of pattern in (19) in section 3.2 that ends up being produced.
We deal with those particular derivations in detail in the next subsection.

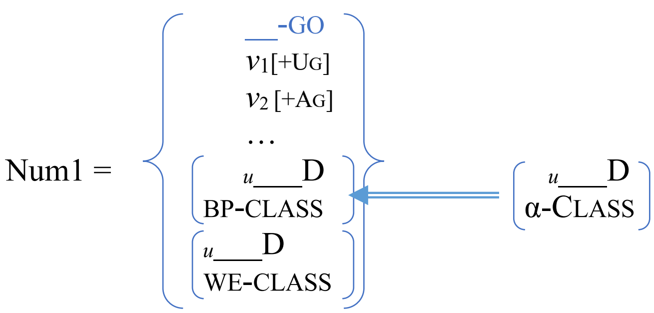
[31] As a reminder, this vectorization, as presented earlier in section 2.3, specifically under (8), is conformed of three heads recursively merged, each representing one of the 3 axes or spatial planes in a Cartesian Coordinate system (Z, vertical; Y, horizontal; X, deictic). The vector of the motion thus created, referred to here as *vectorization*, yields the actual movement of the sign, that is, it encodes the *vector* or 'arrow' of the actual displacement.

4.3 Derivations

Let us now systematically address the logical combinatorial possibilities that can be generated out of specific Numerations to yield the range of potential structural outputs.

First, let us consider a Numeration like that in (35) below, with a __+GO π(-Path) vectorization sub-structure and two *v*'s (one v_1[+UG] related to the internal argument, and one v_2 [+AG] related to the external agentive argument);[32] the absence of a REACH element in the Numeration in (35) will prevent the generation of a telic substructure and thus only an atelic (process) eventive structure will be able to be generated. The Numeration in (35) contains also two classifier morphemes instantiating the {*u*_D, α-CLASS} morpheme, namely a {*u*_D, BP-CLASS} and a {*u*_D, WE-CLASS}. This numeration will correspond to Str-Pattern 1, for a [-cont] agentive type.

(35) Numeration 1 -- Str-Pattern1: BP >>W/E



As a BodyPart classifier, the {*u*_D, BP-CLASS} morpheme will, as per Benedicto and Brentari (2004), bundle with the upper v_2 [+AG] agentive head,[33] whereas the {*u*_D, WE-CLASS} morpheme will bundle up with the lower v_1 [+UG] head associated with the internal argument.
The structure that this Numeration generates, then, is something like (36). The __+GO π-Path vectorization head is a morphologically bound morpheme; as such, it needs to attach to another head. It moves via head-to-head to the next available head,[34] namely v_1 which, in this case, does contain morphological material for the __-GO head to attach, namely the {*u*_D, WE-CLASS}classifier. The resulting head is, thus, morphologically viable and can thus be spelled out with no further movement required.
The *u*_D feature in the {*u*_D, BP-CLASS} classifier morpheme in v_2 [+AG] establishes an AGREE relation to the DP in its Spec, again transferring its CLASS denotation to it; the v_2 [+AG] agentive head with its BP-CLASS classifier is, then, spelled out on its own.[35] In that way, a [-cont] bi-verbal predicate, typical of serial verb constructions, arises.

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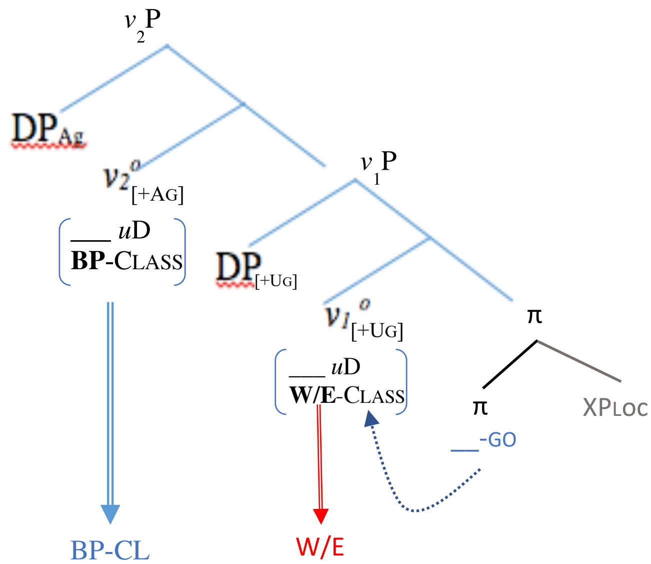
[32] For the sake of clarity and conciseness, we will set aside here other elements of the Numeration (e.g., those involving the upper inflectional part of the tree, such as Aspect or Tense) that, though necessary, are not pertinent to the present discussion; the symbol '…' in the Numeration set is a nod to them.
[33] As we said, this follows from the observed behavior found in Benedicto and Brentari (2004) and much subsequent work. From a theoretical perspective, one could think of two possibilities to explain this: either the actual morpheme in the morphological repository of ASL carries a feature compatible only with the $v_{2\,[+AG]}$ head, as part of its featural specification; or the bundling is free but certain derivations will produce a *crash*. We leave this for future consideration.
[34] Presumably driven by the uninterpretable +V feature in *v*.
[35] This poses a number of questions to be considered. First, if the final head-movement of __+GO in Num1 is the result of an interpretable +V feature in the v_2 [+AG] agentive head, then how is that feature valued in Num2 where __+GO

(36) [-cont] atelic serial bi-predicate: Str-Pattern1



Example (37) illustrates this type (as did example 15a. earlier):

(37) Str.Pattern1 [-cont]: BP>>W/E [0704-ASLsn]

H1. … (MAN).a (CHILD).b V-bnt$_{WE.b}$+BE_AT MAN.a B$_{BP.a}$+PUSH.b BOY.b V-bnt$_{WE.b}$+SLIDE-DOWN.π
H2. … (SLIDE).c B$_{WE.c}$+BE_AT_____ B$_{BP.a}$+PUSH.b B$_{WE.c}$+BE_AT.π________________
'The man pushed the child down the slide'

Let us now examine another Numeration (Num2).
In (38) we can see a Numeration with a __+GO π(-Path) vectorization sub-structure and two *v*'s: one v_1[+UG] related to the internal argument, and one v_2 [+AG] related to the external agentive argument. In the absence of a REACH substructure, this Numeration will generate only an atelic (process) eventive structure. Add to this, only one classifier, namely {*u*_D, HDL-CLASS}, to instantiate the {*u*_D, α-CLASS} morpheme.[36] As a HanDLing classifier, the {*u*_D, HDL-CLASS} morpheme, will bundle with the upper v_2 [+AG] agentive head.[37]

---

remains in v_1 [+UG]? There are two potential paths to explore here: either there is an epenthetic movement inserted at v_2 (Brentari 1993 has proposed such elements for other contexts such as statives like BE_AT), or movement is indeed to satisfy a morphological requirement of __+GO. Both of these options involve the absence of +V feature in v_2. A third option could be that there is indeed a V node under v_2, which would encode the manner-of-agentivity. All these options remain to be evaluated.

[36] For the sake of clarity and conciseness, we will set aside here other elements of the Numeration (e.g., those involving the upper inflectional part of the tree, such as Aspect or Tense) that, though necessary, are not pertinent to the present discussion; the symbol '…' in the Numeration set is a nod to them.

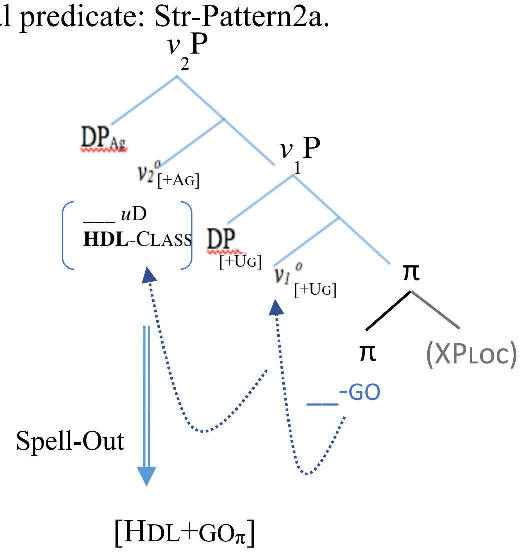
[37] See fn. 33 above, about potential reasons for this bundling.

(38) Numeration 2 – Str-Pattern 2a. mono-verbal predicate: HDLπ

Num2 = { __+GO, v_1[+UG], v_2 [+AG], …, { u__D, HDL-CLASS } } ⇐ { u__D, α-CLASS }

The structure that this Numeration generates, then, is something like (39). The __+-GO π-Path head is a morphologically bound morpheme which, as such, needs to attach to another head. It moves via head-to-head[38] to the next available head, namely v_1[+UG] which, unfortunately, does not contribute morphological material for the __+GO head to attach. It keeps moving up to the next available head, namely v_2 [+AG], where it does find the morphological material provided by {*u*_D, HDL-CLASS}, the HanDLing classifier, that allows the __+GO head to be spelled out. The derivation is thus 'saved,' and it arises as a mono-verbal predicate structure with an atelic, transitive agentive interpretation.

(39) [+cont] Atelic mono-verbal predicate: Str-Pattern2a.



Under this configuration, the *u*_D feature in the {*u*_D, HDL-CLASS}classifier triggers an AGREE operation with the DP in the Spec of v_2 [+AG], thus establishing the effects of what is usually referred to as coindexation or coreference mechanism, basically assigning its class denotation to the DP, much in the way that definiteness or partitive is conferred to the relevant arguments by 'agreement' markers on the verbal morphological complex in languages that have rich templatic morphology.[39]

An example of such derivation is under (40):

---

[38] Presumably, under standard assumptions, this head-to-head movement may be triggered by a (strong) uninterpretable +V feature in each *v*-head. Landing in each *v*-head, __+GO will value that uninterpretable +V feature; this also requires __+-GO to remain visible/active for movement.

[39] See Benedicto (2018) for details on the specific operations involved in this process.

(40) Str-Pattern 2a: Mono-verbal (19.a) ASL [0905-ASLem]

H1.			GIRL.a	TRAIN.b	Cdwn$_{\text{HDL}}$.a+GRAB-GO.π.z
H2.	5)dwn$_{\text{WE}}$.b+BE_AT.z	T-U-N-N-E-L	…	TRAIN.b	5)dwn$_{\text{WE}}$.b+BE_AT.z

‘The girl is pushing (grabbing) the (toy) train down the way towards the tunnel’

In (40), while the non-dominant hand H2 articulates the position of the tunnel on the left (position .z), the dominant hand H1 goes on to articulate the topics of the sentence, GIRL and (TOY) TRAIN, and finally signs the single (mono-verbal) motion predicate Cdwn$_{\text{HDL}}$.a+GRAB-GO.π.z, which simultaneously encodes the grabbing manner of the agent DP via the handshape classifier coindexed with GIRL (Cdwn$_{\text{HDL}}$.a+__), and the motion vectorizing the path (__+GRAB-GO.π) towards position *z*.
The Numeration in (35) and (38) differ minimally in the number and type of classifiers. That allows for different types of complex heads to arise, which in turn determines the kinds of syntactic operations (head movement) that take place which, in turn, will result in the minimally but substantially different structures in (36) and (39), respectively.

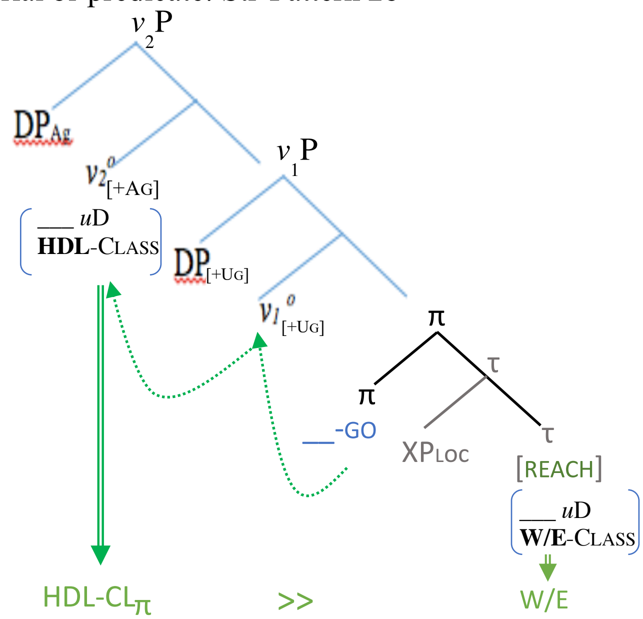
Let us now consider a Numeration (Num3 in (41) below). We will see here how minimal differences in the Numeration, trigger different operations and different interpretations. In (41) we have, in addition to the usual v_1[+UG] and v_2 [+AG], two sub-eventive heads: __+-GO AND __+REACH. For classifiers, Numeration 3 has two: an agent-related HDL- and an undergoer-related W/E.

(41) Numeration 3 -- Str-Pattern 2b: HDL >>W/E

Num3 = {
__+-GO
__+-REACH
v_1[+UG]
v_2 [+AG]
…
{ $_u$___D HDL-CLASS } ⟸ { $_u$___D α-CLASS }
{ $_u$___D WE-CLASS }
}

The structure that can be built out of this Numeration will yield a linear sequence that may look quite similar to the structure of Num1 in (35) (Str-pattern 1: BP >> W/E), but whose structure is crucially different. In Num3, the HDL- classifier will bundle, as usual, with the v_2 [+AG], and the W/E- classifier will bundle with __+-REACH. Under this arrangement, __+-GO will again be in need of an element to attach to. Since v_1[+UG] will not, as in Num2, have appropriate material, it will need to continue head-movement all the way to v_2 [+AG]. This is what we see in the tree in (42) below:

(42) [+cont] telic serial bi-predicate: Str-Pattern 2b



In this structure we see that the bound head __+REACH can be spelled out on its own because of the presence of bundled W/E+__ classifier. __+GO, as we mentioned above, needs to keep moving up until it finds appropriate material to attach to, in v_2 [+AG], with the HDL+__ classifier. The result is, as in Num1, a linear sequence of an agent-related classifier (a HDL- in this case) followed by a W/E, but the structure and the operations that have happened (modulo the bundling out of the particular Numeration) turn out to be quite different.
This Num3 and its corresponding structure in (42) yield pattern 2b. in (19). In (43) we can see an example of that pattern, repeated from (21) above:

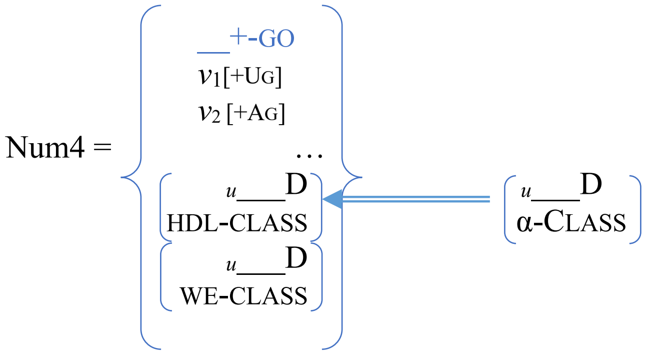
(43) Str-Pattern 2b: HDL-WE 19.b [0707-ASLem]
H1. …(SLIDE)$_{.c}$ (FATHER)$_{.a}$ (CHILD)$_{.b}$ C-C$_{HDL.a}$+HOLD-GO.π V-bnt$_{WE.b}$+SLIDE-REACH.z
H2. … C-C$_{HDL.a}$+HOLD-GO.π B-fl$_{WE.c}$+BE_AT
‘the father is holding the child down the slide all the way to the ground’

In (43) we can see the W/E classifier, V-bnt$_{WE.b}$+___, attached to the +REACH head, while -GO is articulated with the agent-related C-C$_{HDL.a.}$ the, as expected out of the operations that have taken place in (42).

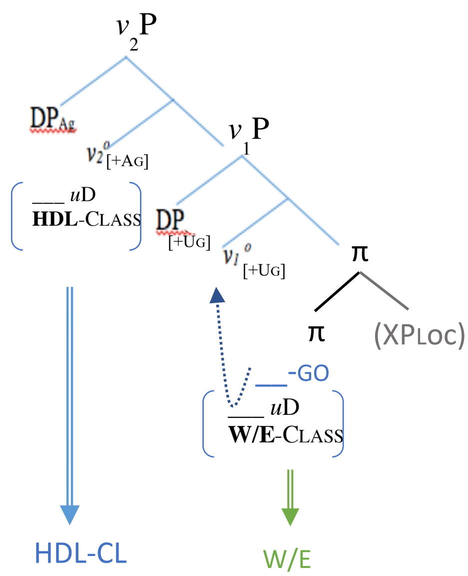
Let us now consider Numeration 4 (Num4) in (44) below.
Num4 has, like Num2, only a __+GO, with the usual two v's: v_1[+UG] and v_2 [+AG].[40] Unlike Num2, and like Num3, it has two classifier units: an agent-related HDL- and an undergoer-related W/E.

[40] These two functional heads, : v_1[+UG] and v_2 [+AG], are always necessary since we are trying to build agentive transitive structures. Without them and under the assumptions we have laid out in 4.1, an agentive transitive structure cannot arise.

(44) Numeration 4 -- Str-Pattern 2c. *Sandwich*: HDLπ>WE1π>HDLπ



(45) [+cont] atelic serial *sandwich* bi-predicate: Str-Pattern 2c [preliminary]



In (45) the undergoer-related W/E- classifier is bundled up with the π-vectorization structure __+-GO. As such, it is ready to be spelled out.[41] On the other hand, v_2 [+AG] also has an agent-related HDL- classifier bundled up with it, which also makes it ready to be spelled out on its own. However, if the structure were to be spelled out at this point the agent-related HDL- would not be articulated on the motion vector since the π-structure has not moved to it,[42] not to mention the fact that the linear order would be HDL>>W/E and not the actual pattern HDL>>W/E>>HDL. What we will explore here is the possibility that the lower complex π does move up to v_2 [+AG] so that HDL- can participate of the motion vector.[43] Let's hypothesize that the phonological operation counterpart to this syntactic movement would split the HDL- to accommodate the fully formed word moving into v_2 [+AG] , and that this could be a property, a modality-specific property of sign

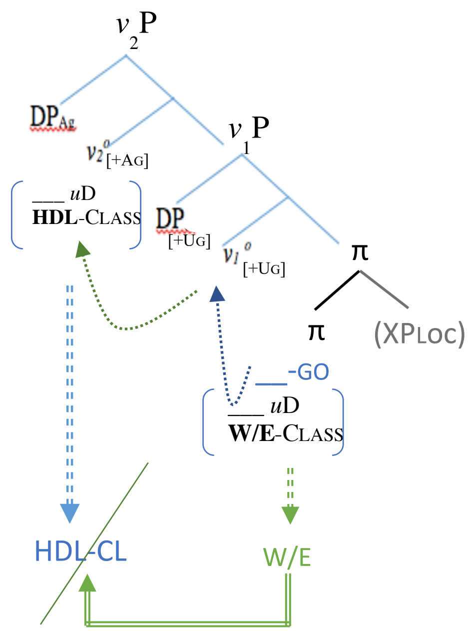
[41] There may be movement to v_1[+UG] if v_1[+UG] has an uninterpretable +V feature

[42] As we have pointed out before, HDL- are articulated on the motion vector, while BP- are not. We traced this back to head-movement of π to the agentive head v_2 [+AG].

[43] The technical details of this operation, e.g., what exactly would trigger this movement is left to be explored.

languages. If this were on the right track, then the split of HDL- would create a copy before and a copy after the inserted W/E+-GO.π element. This is represented in (46) below:

(46) [+cont] telic serial sandwich bi-predicate: Str-Pattern 2c [revised]



HDL$_α$ >>W/E >> HDL$_α$

The example of (47) would be an instantiation of such a structure.

(47) Str-Pattern 2c.: Sandwich (19c) [0610-ASLem]

H1.	BOY.a DUCK.b ...	**5)$_{HDL}$.a+HOLD**	1]$_{WE}$.b+-GO.π	**5)$_{HDL}$.a+HOLD-GO.π**
H2.		5)$_{HDL}$.a+ HOLD ---------	5)$_{HDL}$.a+HOLD-GO.π ---	------------------------

'the boy holds the duck going away'

In (47) we can see the HDL **5)$_{HDL}$.a+HOLD** being split by the undergoer-related 1]$_{WE}$.b+-GO.π. Notice that the split does not affect the articulation of H2 which continues to maintain the HDL-handshape while H1 is articulating the W/E-, 1]$_{WE}$.b+-GO.π. In fact, we could expect that if another argument, say, a locative, were in the Numeration and needed to be articulated, it would appear in H2, fully interrupting the HDL- articulation that would be retaken afterwards. This is in fact what we see in a case of HKSL reported in Benedicto et al (2016) and Benedicto (2016):

(48) [0706-HKSL]

H1.	(CHILD).b (FATHER).a	**5-5$_{HDL}$.a=HOLD**	Y$_{WE}$.b+SLIDE-DOWN.π	**5$_{HDL}$.a+HOLD-SLIDE_DOWN**.π	
H2. (SLIDE).c	B$_{WE}$.c+BE_AT.π_	5-5$_{HDL}$.a=HOLD	B$_{WE}$.c+BE_AT.π ___________________________		

In (48) we can observe how the undergoer-related classifier Y$_{WE}$.b+SLIDE-DOWN.π splits the agent-related 5-5$_{HDL}$.a+HOLD, creating the sandwiched pattern. In this case, however, H2 does not maintain the sandwiching 5-5$_{HDL}$.a+__ during the split, as it happened in (47),but rather articulates the *via* element (B$_{WE}$.c+BE_AT.π, denoting the slide on which the motion vector happens). Here then the interruption, the split operation, that took part in (47) in only the H1, happens in both H1 and H2. After the split is over, H1 continues with the HDL while H2 maintains the *via* element (B$_{WE.c}$+BE_AT.π). I take this to be a matter of the particular phonological operation implementing the split and of how the morphological information is distribute through the different articulators (H1, H2).

Let us next consider the last morpho-syntactic pattern, 2d, the co-articulation pattern. In this case, too, we have two classifier units: an agent-related HDL- and an undergoer-related W/E. With the usual two little *v*'s, v_1[+UG] and v_2[+AG], and the motion vector __+-GO, we end up with a Numeration very similar to that of Num4, corresponding to the previous *sandwich* type, as we see in (49):

(49) Numeration 5 -- Str-Pattern 2d Co-articulation: HDLπ> HDLπ+WE1

Num5 = { __+-GO, v_1[+UG], v_2 [+AG], …, { $_u$___D HDL-CLASS }, { $_u$___D WE-CLASS } } ⟸ { $_u$___D α-CLASS }

This Numeration is responsible for examples like the following, repeated here from (23) and (24) earlier, respectively:

(50) Pattern 2d.: Co-articulation [0620b-ASLem]

H1.	BOY.a DUCK.b …	5)$_{HDL.a}$+HOLD	1]$_{WE.b}$+-GO.π
H2.		5)$_{HDL.a}$+HOLD ---------	5)$_{HDL.a}$+HOLD-GO.π

'the boy holds the duck going away'

(51) Pattern 2d.: Co-articulation (with hand-contact) [0610-ASLsn]

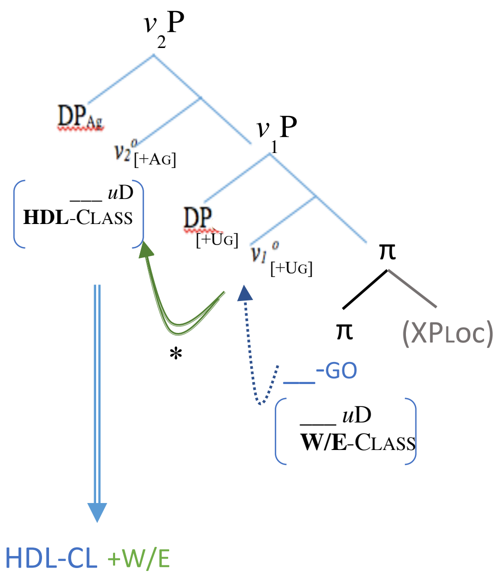
H1.	BOY.a DUCK.b …	5)$_{HDL.a}$+HOLD	5)$_{HDL.a}$+HOLD-GO.π
H2.		5)$_{HDL.a}$+HOLD ---------	2>$_{WE.b}$$^{5)}$+-GO.$\pi$

'the boy holds the duck going away'

In both cases, the initial agent-related HDL- (5)$_{HDL.a}$+HOLD) is followed by an undergoer-related W/E- (1]$_{WE.b}$+-GO.π and 2>$_{WE.b}$$^{5)}$+-GO.$\pi$) on one hand (either H1 or H2) while the other hand keeps articulating the initial HDL-.

If the Numeration is the same as in (44) for a *sandwich* pattern, what is different here that yields a similar but different morpho-syntactic pattern? If we look at the tree we build out of Num5 in (49), using the same considerations to get the motion vector π to v_2[+AG], we end up with (52):

(52) [+cont] atelic serial co-articulation bi-predicate: Str-Pattern 2d



The derivation in (52) is basically the same one as in (46) with the crucial difference that the last step (head movement of <v_1[+UG] +W/E-GO> to v_2 [+AG], marked with a * in (52)) does not produce, or is not spelled out as a split (as it does in the *sandwich* option of (46)) but as a regular sequential concatenation of heads. Notice that the fact that the W/E in both examples (50) and (51) (1]$_{WE.b}$+-GO.π and 2>$_{WE.b}$$^{5)}$+-GO.π, respectively) is being simultaneously co-articulated with the HDL- on the opposite hand, lends credence to the plausibility of that final head movement. We can thus hypothesize that the morpho-phonological component that processes the syntactic derivation can assign one or the other solution to that derivation: a split (yielding a *sandwich*) or a concatenation (yielding a co-articulation).[44] Whether there is any other condition that will tilt the balance one way or another, remains for future exploration.

The last case we address here is what we have called Seq-Path2 (19)e. This case is peculiar because unlike the other patterns discussed above, the second element in the serial sequence is coindexed, not with the undergoer but coreferential with the agent argument of the HDL-; that's the why of the label: a serial Sequence where the second element involving the Path is coindexed with argument 2 (the agent). Let us look at the example we provided in (25) and (26), repeated here:

(53) Pattern 2e.: Seq-Path2 (~Agent) HDL.AG$_j$- >> W/E$_j$+-GO.π.

[0610-ASLkq]

H1.	BOY.a		DUCK.b	5)$_{HDL.a}$+GRAB-HOLD	Bfl$_{WE.c}$+BE_AT.z
H2.		1$_{WE.a}$+ BE_AT.w		5)$_{HDL.a}$+GRAB-HOLD	1$_{WE.a}$+GO-TO.π

'There is a boy that holds a duck, goes away (towards the horizon) '

[44] *Splits* are not strange to the morpho-phonological component. They are responsible for outputs involving infixes, and in languages where this happens (e.g., Mayangna, see Benedicto and Hale, 2001), it is not unheard of to find 'doublets' that is, two different solutions to affixation, one as an infix and one as a suffix. The precise nature of this phenomenon (and whether it has to do with individuals that are bilingual or have access to other grammars or simple options) is still an undecided matter.

(54) Pattern 2e.: Seq-Path2 (~Agent) HDL.AG$_j$- >> W/E$_j$ +-GO.π. (with HDL-)

[0621-ASLsn]

H1. DUCK.b 5)$_{HDL}$.a+ HOLD 5)$_{HDL}$.a+ HOLD
H2. BOY.a Vdwn$_{WE}$.a+ BE_AT.w 5)$_{HDL}$.a+ HOLD Vdwn$_{WE}$.a+GO-TO.π
'A boy standing there, holds a duck, comes near while holding it.'

In both cases, the argument coindexed with the second verbal element in the verbal series (1$_{WE}$.a+GO-TO.π in (53) and Vdwn$_{WE}$.a+GO-TO.π in (54)) is coreferent with the argument coindexed with the first verbal element, the agent associated with 5)$_{HDL}$.a+ HOLD. This coreference makes the derivation that we have used in the previous cases impossible, since there the arguments associated with v_1 [+UG], and v_2 [+AG], are disjoint in reference. Even though the second argument in (53 and (54) correspond to a v_1 [+UG], because of the use of a W/E classifier, any coindexation would produce a reflexive structure, which is not what we have. Furthermore, 5)$_{HDL}$.a+ HOLD already has an object, namely DUCK (that would take the v_1 [+UG] associated with the object of HOLD). All in all, the structure in (33) that we have used for the previous cases, becomes inappropriate for the Numeration selected for this type of cases, which could be that of (55).

(55) Numeration 6 – Str-Pattern 2e SeqPath2: HDL.AG$_j$- >> W/E$_j$ +-GO.π

Num6 = {
__-GO
v_1[+UG]
v_2 [+AG]
v_1[+UG]$_j$
…
{ $_u$___D HDL-CLASS } ⇐ { $_u$___D α-CLASS }
{ $_u$___D WE-CLASS }
}

Num6 reflects the fact that two v_1[+UG] are needed, one to go with v_2 [+AG] in the HDL-,[45] and another v_1[+UG] to go with the second verbal element, W/E$_j$ +-GO.π. This state of affairs also brings about the question of what exactly is the meaning of the first verbal element in the series, HDL.AG$_j$, beyond its purported participation in the motion vector, something we return to in section 5.

What is interesting here, in dealing with the structural derivation that Num6 may generate, is to remember that utterances, and the predicates in them, are *descriptions* of events and that the way they are *perceived* or *interpreted* may differ from person to person, or even from time to time for the same person. Clearly in these cases, the event or situation is conceived off in a different way than the previous ones. There are several question that arise here. One is whether this pattern even qualifies as a verbal series; the fact that this coreference exists is clearly not an impediment: languages with wide use of SVCs show this type of SVC where the argument associated with second element is coreferent with the agent in the first.[46] We still see the first HDL- being co-

[45] This, which was proposed in Benedicto and Brentari (2004) for HDL's, captures the fact that the HDL handshape not only introduces the external agentive argument, but also includes morphological information about the object

[46] The Misumalpan languages are a case in point. They have a morphological marking system in the first verbal element in a series that indicates whether the following one has the same or different referent, sometimes referred to as Proximate/Obviative and sometimes as SameSubject/DifferentSubject. The SameSubject morphological marker

articulated in the (54) example, which we have taken earlier as an indication of serial coherence. However we know little about the syntactic behavior of H2 when it retains a previous handshape. In addition, not all SVCs have the same structure, and (33) is one that is generally used for transitive structures; what we have in Str-Pattern 2e may not be a transitive structure. It may also be that these cases respond to a looser clausal structure, maybe of an adjunction type, as the one proposed in Kimmelman (2019; 39), though the relation between the sub-clausal units there is not specified either.[47] For now, we leave this for future explorations.

5. Looking forward.

In this paper we have looked at the different strategies to transitivize motion predicates via the addition of an agent, in particular examining the relation between the agent argument and the undergoer argument, and between the agent argument and the motion vector π-substructure of the predicate. We have seen that the distinction [+continuous]/[-continuous] contact between agent and undergoer is morpho-syntactically real and manifests itself via the choice of specific classifier: HDL- for [+cont] and BP- for [-cont]. We have also seen that the cases of [+cont] contact involve syntactic head-movement of the motion vector π-structure to the agentive $v_{2\,[+\text{AG}]}$ head, where the HDL- classifier is located. Finally, we have explored the hypothesis that the different morpho-syntactic patterns that arise for [+cont] contact agents can be derived from the particular Numeration set that is selected for that derivation, together with the specific types of classifier morphemic complexes and the syntactic operations that take place to obtain a successful derivation.

All this has led to consider a series of questions that arise, some of them technical, some more conceptual. To begin with, if [+cont] can be derived from π-raising to $v_{2\,[+\text{AG}]}$, what in particular allows that syntactic movement when HDL- is in $v_{2\,[+\text{AG}]}$ but not when BP- is? In fact, if operations are, by hypothesis, free to apply (of course, with varying degrees of success in the final derivation), then we'd expect that raising to take place too with a BP. And, indeed, we find that option in one of the renditions in our dataset:

(56) BP- with π-raising [0906-ASLsn]

H1. GIRL.a … TRAIN.b .. Cdwn$_{hdl.a}$+GRAB.π **B$_{ag.a}$**+-GO.π.z ---------------

H2. TUNNEL.c 5)dwn$_{we.c}$+BE_AT.z TRAIN.b 5)dwn$_{we.c}$+BE_AT.z -------------3$_{w/e.b}^{B}$+GO.π.z----

'there is a tunnel, and the girl grabs the (toy) train down towards the tunnel, pushing it into it'

In (56), the signer, after beginning to use an HDL- classifier (Cdwn$_{hdl.a}$+ GRAB.π) switches to a BP-B-handshape that is, crucially, articulated on the motion vector (π) (thus indicating π-raising) while the H2 begins to articulate the W/E- 3$_{w/e.b}^{B}$+GO.π.z , with BP- behind the W/E, in full contact with it, just as we saw in some of the cases with HDL- (e..g, (51)). In order to have a clearer picture of this landscape, we are currently creating a set of new stimuli that are designed to elicit BP-

would be used in these SeqPath2 cases, where the DifferentSubject would be used in the former. Ken Hale had extensive work done on this. (Hale, 1989, 1991, 1992, 1997; see also Benedicto and Hale, 2001)

[47] One of the crucial aspects to take into account when building a structure is to reflect the c-command relations established by it. For instance, in adjunction structures wh-extraction is impossible; this and other tests based on c-command are used to (dis)confirm potential structures (see Benedicto et al., 2019).

classifiers in situations where renditions like (56) (with a BP articulated on π and in [+cont] contact with the undergoer).

If this is indeed an option, then what really is the difference between HDL- and BP- classifiers? What is the nature of their difference, in terms of syntactic structure? Clearly, HDL's encode information about the object and one could even encode that in terms of selectional restrictions: HDL's are always transitive. BP's, on the other hand, are not; in fact, most of the examples that Benedicto and Brentari (2004) deal with are not transitive.[48] What BP's can do is take a subeventive structure that merges as a complement to the BP v_2 [+AG] and create a syntactic 'complement' (very much in the same way of resultatives like *drink the teakettle empty* or *run your shoes ragged*, where neither *teakettle* nor *your shoes* can be said to be the selected internal argument of, respectively *drink* or *run*, but they can be shown to be in a syntactic complement configuration). This latter syntactic mechanism is the one responsible for structures like (56) above. To be clear, though, having a subeventive π-structure is not the only kind of syntactic complement that a BP- can take: one can kick a rock and the rock will not move, so under that interpretation, there is no π-structure under BP (probably just a regular DP). All this circles us back to ponder what the basic (meaning and otherwise) difference is between an HDL- and a BP- in terms of the nature of their relationship with their purported objects. We will be taking these questions in future research.

More generally, the issue of SVCs in sign language brings about the tension between simultaneity and sequentiality. Sign languages are claimed to be of a nature such that a number of morphemic information can be piled up simultaneously, much more so than spoken languages. However, in the case of verbal series, sequentiality is the property that prevails. So, what determines whether sequentiality or simultaneity takes the lead? How do all the pieces of the puzzle find their distribution (sequential or simultaneous)? In that sense, too, we need to better understand the role of the non-dominant hand H2, not only in terms of how to incorporate its content into the structure but which content ends up in H2 and not in H1 and vice versa.

Finally, a closing general note about the importance of obtaining solid crosslinguistic data from a wide variety of linguistic sources. Much of our work, including the present one, is done about languages that are in the western world, under very similar conditions. It is important, from a scientific and a social perspective, to examine a wide range of languages that can give us a better idea of the internal parametrization within sign languages and a good comparative basis between sign and spoken languages, so that, if there is a true modality effect, it can be identified on a solid footing.

References

Aikhenvald, Alexandra. 2000. Classifiers: A Typology of Noun Categorization. Oxford University Press, New York.

[48] By transitive, I mean a true overt syntactic argument, with the interpretation of undergoer, that can be detected by syntactic tests. That does not include abstract decompositional analysis that postulate a hypothetical underlying 'object' for unergative predicates.

Baker, M. 1989. Object Sharing and Projection in Serial Verb Constructions. Linguistic Inquiry. Vol 20, No. 4, 513-553.

Benedicto, Elena. 2004. Non-traditional uninterpretable D features in the verbal functional domain: parasitic D[class]. Paper presented at GLOW 27. Thessaloniki, Greece. April 2004.

Benedicto, Elena. 2016. Transitivizing strategies for motion predicates in 3 Sign Languages. Paper presented at the FEAST (Formal and Experimental Advances to Sign Language Theory) Conference. Università Ca' Foscari, Venice, Italy. Sept 1-2, 2016.

Benedicto, Elena. 2017. Agent-adding strategies for motion predicates in ASL. Paper presented at the *Linguistic Society of America* Conference *(LSA 91st*). Austin, Texas. January 5-8, 2017.

Benedicto, Elena. 2018a. Agents, Classifiers and SVCs: Structural Deconstructing Strategies for Motion Predicates (in ASL and beyond). Invited Lecture given at *Argument Structure across Modalities, ASAM* 2018. University of Amsterdam. Amsterdam, The Netherlands. February 1 and 2, 2018.

Benedicto, Elena. 2018b. "Verbal Classifiers in Sign Languages. . . Agreement vs. AGREE?" In UMOP 40: The Leader of the Pack. A Festschrift in Honor of Peggy Speas, edited by Ivan Rodica, 1–18. Amherst: GLSA.

Benedicto, Elena. 2019. Motion Predicates: Moving Along. A Tool for the Analysis of the Sub-Eventive Structure inMotion Predicates. https://doi.org/10.4231/R7PN93M4.

Benedicto, Elena. 2019. Simultaneity vs Sequentiality: Serial Verb Constructions at the intersection. The case of Agents in Motion Predicates. Presented at the *55th Chicago Linguistic Society*. Chicago, May 16-18, 2019.

Benedicto, Elena, Chiara Branchini and Lara Mantovan. 2015. *Decomposing the internal structure of Motion Predicates in Italian Sign Language (LIS).* Presented at the FEAST conference, Universitat Pompeu Fabra, Barcelona, May 4-6 2015.

Benedicto, Elena, Chiara Branchini and Lara Mantovan. 2021. Decomposing the internal structure of Motion Predicates in Italian Sign Language (LIS). Ms. Purdue University and Università Ca' Foscari.

Benedicto, Elena, Chiara Branchini, Lara Mantovan and Robin Shay (with Gladys Tang and Sharon Borkowski). 2016. Decomposing the internal structure of motion predicates in three sign languages: LIS, HKSL, ASL. Poster presented at the TISLR 12 (Theoretical Issues in Sign Language Research). La Trobe University, Melbourne Convention Centre, Melbourne, Australia. January 4-7 2016.

Benedicto, Elena and Elizabeth Salomón. 2014.a Multiple V-V mono-eventive syntactic complex in Mayangna. In P. Littell, A. Gutiérrez, R. Girard, and N. Weber (eds.), *Papers from the Seventeenth Workshop on Structure and Constituency in the Languages of the Americas* (WSCLA 17), University of Chicago, Chicago, Illinois, March 9–11, 2012. University of British Columbia Working Papers in Linguistics 36, pp. 15–27.

Benedicto, Elena and Elizabeth Salomón. 2014b. Trayectoria y Manera en los Predicados deMovimiento en Mayangna: propiedades morfo-sintácticas y estructurales en Construcciones Seriales. In Lilián Guerrero (ed), Movimiento y espacio en lenguas de América. Mexico City: Mexico: UNAM (Universidad Nacional Autónoma de México).

Benedicto, Elena, Pin-Hsi Patrick Chen, Kwaku Osei-Tutu, and Neda Taherkhani. (2019). 'Non-standard complementation: The case of serial verb constructions in motion predicates. A cross-linguistic, cross-modality study', in Cho, Sae-Youn (ed.) Proceedings of the 12th Generative Linguistics in the Old World & the 21st Seoul International Conference on Generative Grammar 293–308.

Benedicto, Elena and Kenneth Hale. 2001. Mayangna, A Sumu Language: Its Variants and Its Status within Misumalpan. University of Massachusetts Occasional Papers, vol. 20, 75-106. E. Benedicto (ed). 2000. The UMOP Volume on Indigenous Languages.

Borer, Hagit. 1994. 'The Projection of Arguments', in E. Benedicto and J. Runner (eds.), University of Massachusetts Occasional Papers 17, GLSA, University of Massachusetts, Amherst, pp. 19–47.

Borer, Hagit. 2005. Structuring Sense. An Exo-Skeletal Trilogy, Oxford University Press, Oxford.

Brentari, Diane. 1993. Establishing a sonority hierarchy in American Sign Language: The use of simultaneous structure in phonology. *Phonology*, 10(2), 281-306.

Carstens, Vicki. 2002. Antisymmetry and word order in serial constructions. Language 78(1): 3-50.

Chen, Pin-Hsi Patrick. (2020). 'How sub-event verbal classifiers and numerals are related to telicity in Taiwan Mandarin: From a constructionist perspective', in Chen, Kaidi (ed.) Proceedings of the 32nd North American Conference on Chinese Linguistics (NACCL-32) 97–114.

Chen, Pin-Hsi. 2021. 'An Exo-Skeletal Analysis of Complex-Path Motion Predicates in Taiwan Mandarin', Ph.D. Dissertation. West Lafayette, IN: Purdue University.

Chomsky, Noam. 1995. The Minimalist Program, MIT Press, Cambridge, MA.

Engberg-Pedersen, Elisabeth. 1993. Space in Danish Sign Language, Signum Verlag, Hamburg.

Hale, Ken and LaVerne, Jeanne. 1999._ Hopi -na*. In MIT Working Papers 33

Hale, Kenneth and Jay Keyser. 2000. Prolegomenon to a Theory of Argument Structure, MIT Press, Cambridge, MA.

Hale, Kenneth and S.J. Keyser. 1993. On Argument Structure and the Lexical Expression of Syntactic Relations. In K. Hale & S. J. Keyser (eds.) The View from Building 20: Essays in Honor of Sylvain Bromberger, MIT Press, Cambridge, MA, pp. 53-110.

Hale, Kenneth. 1989. The causative construction in Miskitu. In Jaspers, D., et al. (eds.) Sentential Complementation and the Lexicon: Studies in Honour of Wim de Geest, pp. 189–205. Foris Publications.

Hale, Kenneth. 1991. Misumalpan verb sequencing constructions. In Lefebvre, C. (ed.) Serial Verbs: Grammatical, Comparative and Cognitive Approaches, pp. 1–35. Amsterdam: John Benjamins.

Hale, Kenneth. 1992. Subject Obviation, Switch Reference, and Control. In Richard K. Larson, Sabine Iatridou, Utpal Lahiri and James Higginbotham (eds.) Control and Grammar, Studies in Linguistics and Philosophy, vol. 48, pp. 51–77. Dordrecht: Kluwer Academic Publishers.

Hale, Kenneth. 1997. The Misumalpan Causative Construction. In Bybee, Joan, John Haiman, and Sandra A. Thompson (eds.) Essays on Language Function and Language Type Dedicated to T. Givon, pp. 200–215. Amsterdam: John Benjamins.

Harley, Heidi. 2013. External arguments and the Mirror Principle: On the distinctness of Voice and v. Lingua 125 (2013) 34—57.

Kimmelman, Vadim, Roland Pfau and Enoch O. Aboh. 2019. Argument structure of classifier predicates in Russian Sign Language. Nat Lang Linguist Theory. https://doi.org/10.1007/s11049-019-09448-9

Kratzer, Angelika. 1996. Severing the external argument from its verb. In Phrase structure and the lexicon, eds. Johan Rooryck, and Laurie Zaring, 109-137. Dordrecht: Kluwer.

Larson, Richard. 1991. Some issues in verb serialization. In Lefebvre 1991, 185–210.

Lau, Prudence. 2008. On Serial Verb Constructions in Hong Kong Sign Language. Presented at the PRFL-5

Lau, Prudence. 2012. Serial Verb Constructions in Hong Kong Sign Language. Ph.D. Dissertation, The Chinese University of Hong Kong, Hong Kong.

Osei-Tutu, Kwaku. O. A. 2019. A formal syntactic analysis of Complex-Path motion predicates in Ghanaian Student Pidgin (GSP). Ph.D. Dissertation. West Lafayette, IN: Purdue University.

Padden, Carol. 1988 [1983]. *Interaction of Morphology and Syntax in American Sign Language*; Outstanding Diussertatins in Linguistics. New York: Garland (originally distributed as: PhD dissertation, University of California, San Diego).

Ramchand, Gillian. 2008. Verb Meaning and the Lexicon: A First Phase Syntax. Cambridge, MA: Cambridge University Press.

Santoro, Mirko & Aristodemo Valentina (2021). A preliminary study on causatives in Italian Sign Language. FEAST 4: 139-149. https://doi.org/10.31009/FEAST.i4.11. http://www.raco.cat/index.php/FEAST

Supalla, Ted. 1985. 'The Classifier System of American Sign Language', in C. Craig (ed.), Noun Classification: Proceedings of a Symposium on Categorization and Noun Classification, John Benjamins, Philadelphia, pp. 181–214.

Svenonius, Peter. 2008. Projections of P. In Syntax and semantics of spatial P, eds. Anna Asbury, Jakub Dotlacil, Berit Gehrke, and Rick Nouwen, 63–84. Amsterdam: John Benjamins.

Taherkhani, Neda 2019. A Syntactic Analysis Of Motion Predicates In Southern Tati (Takestani Dialect). Ph.D. Dissertation. West Lafayette, IN: Purdue University.

Zheng, Chun. 2015. An analysis of motion events across three Chinese languages: Chaoshan, Mandarin & Cantonese. Manuscript, Purdue University.

Not all Agents are created equal: Agents in Motion.

A Preface, or a Warning.

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When I sat down in front of the blank page to begin (writing) this paper, no more than one page had gone down that I begin to hear that little inner voice: 'how many of you are there? How many people are writing this paper?' The obvious answer was 'just me' but I was using 'we.' Having spent several years in an English department, I have by now heard of the 'rhetoric' of 'US-based academic writing.' I also know now that there is more than one 'rhetoric' of 'academic writing.' But the first time I was made aware, at an intuitive sense, of that was when Hagit asked me, as a graduate student, that question in relation to a draft that I had written for something. A path (no pun intended, or maybe it is… who knows the subconscious!) began at that point to learn that mysterious 'academic writing' that was apparently so different from the one I carried with me from the other side of the Atlantic. Learning it was part of the rite of passage to become a 'proper academic.' And in some sense I did (some would probably argue that I haven't!).

Of all the things I learned, or I was made aware of, the 'we' is one of the most difficult ones. 'I' sounds so self-centered, so selfish, so egocentric! I know I am the owner of my ideas and my mistakes. Nevertheless, it feels, still, selfish. Someone once said that by saying 'we', we recognize all those shoulders on top of who(m) we walk. That sounds good but being honest, maybe not true all the time. Most of the time, it is that sense that you are there with your reader, reading the paper together. At least, that's the intuitive feeling I get most of the times.

Here, and because of the nature of these papers (no peer-review, no judgement), I saw myself saying 'hey, [insert here some useful interjection], I'm not going to correct it (because I always still have to correct it!), I'm going to let it be!' And it has been a liberating decision! ☺ it's my choice right now. Probably, if I revise this paper and submit it to a 'proper' journal, I will have to change all that. But now, I don't; there will be "I" and there will be "us" (as a proper bi-cultural person would have, a creolization of rhetorical academic writing styles!). And so, that decision brought back to memory a bunch of all those things that not only I had to learn to be a 'proper academic writer' but that I find myself telling my own students… Ah, the wheel of transmission!

Here's a list of all those things, beyond the 'I/we' as I remember them:

- Short sentences! No subordination! Where I came from, you showed your mastery of building long paragraphs maintaining proper syntactic structure: subordination within subordination, coordination. Cicero was the model! Not here. You had to have lots of periods. Cut off all that subordination and make all those sentences simple matrix sentences. Some 'thus', some 'therefore' but that's it… .Those were after all not subordinating conjunctions but just fancy coordinating 'linkers.' Some people around me (in graduate school) said that it was because Americans couldn't process complex subordination. For whatever reason, the art of complex sentences went all the way to the trash (though I still get comments from some reviewers saying 'too complex/long sentence; cut it, simplify' –I also get the comment about typos, but there are no typos of course (spell checkers mostly take care of that these days), they just mean L2 English). Maybe this last one counts as a 'long sentence' although it is more of a rambling than a good example of 'the art of complex sentences'!
- the sandwich structure. Truth be told, I heard this from a fellow Transatlantic linguist. You begin by saying what you are going to say- you say it -then you say what you just said. Simple uh? Introduction - Body – Conclusions.

- ‘don’t tell me your story … nobody is interested in knowing how you got to your hypothesis/ idea.’ I’ve seen this one so many times in students’ writing (L1 English students, in fact!), mostly in the Acknowledgments section. All those hours spent coding, the meandering path of one’s own thoughts until you get to that sweet spot of an original idea that seems to perfectly fit and explain everything (… until of course you realize it doesn’t!). ‘Don’t tell me your story’ … where I come from, you had to tell your story … it was almost what validated your work! I recognize that those other ‘rhetorical styles’ are wordy, full of air sometimes, but your story, your story is your story!
- ‘you don’t have to write everything you know, just what is relevant to the argument.’ Now, this one is a useful one, almost a liberating one. But there is always the question of what you do with all those things you know that don’t fit. I can’t remember if it was Hagit who told me, probably – but I see myself telling my students to get a little box and put all those ideas there for the future. It is a great way of ‘taking care’ of those little ones (that after all are your children too!) … and also have a pool of ideas to work on in the future!

Now the reader, if it ends up there being a reader (or ‘if there ends up being a reader’ … hmm), will find an example of all those things in my paper… I really felt a big relief in deciding I was not going to guillotine all those tendencies that tenaciously stay there in my writing mode. And I enjoyed the writing! Though probably the result is better to write than to read (the reading tends to appreciate all the ‘order’ and the good craft).

So, Hagit, if you read this and the paper, don’t feel too disappointed … your teaching, your training, did get somewhere … you taught me not only all those skills, of course (that they were skills, and thus, learnable, was a relief because it meant you could learn them, that they didn’t have to spontaneously arise within you!): how to build an argument was one of the most delightful things to learn (the pleasure of the ‘check mate’!), how to argue ‘live’ (such a joy to see you do it, and thereby learn from it!). So very few women role models at the time, powerful women… and you were the perfect one at that!

It’s just that this time, … I just took a joy ride!

Happy Birthday!!
(… and see you soon on zoom from La Habana)

April 2022.