A Sign-Based Construction Grammar analysis of "middle" *je-* in Paraguayan Guarani

Bruno Estigarribia
Department of Romance Studies, University of North Carolina at Chapel Hill

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Abstract

Paraguayan Guarani verbs prefixed with *je-* have "middle-like" passive, reflexive, impersonal, anticausative, and autocausative uses. I provide a Sign-Based Construction Grammar (SBCG) analysis showing that *je-* has a general and minimal argument-reducing function and that lexical semantics and context are jointly and systematically responsible for interpretive effects.

1 The Paraguayan Guarani "passive/reflexive" prefix *je-*

Paraguayan Guarani (PG) is the most widely spoken language in the Amazonian Tupi-Guarani family (Tupian) and is the only autochthonous language of the American continent spoken by a non-indigenous majority. Interestingly, the study of Guarani, and of Tupi-Guarani languages more generally, has a long tradition, but none of it in the HPSG or SBCG frameworks.

PG is an agglutinative and postpositional language, with marginal polysynthesis, SVO basic order, an active/stative split for intransitive verbs, direct/inverse alignment for transitive verbs (subject to a person hierarchy), clusivity, and nasal harmony (Estigarribia 2020: 2, and passim). Its voice system includes three valence-reducing prefixes (passive/reflexive, reciprocal, antipassive) and three valence-increasing affixes with causative semantics (Estigarribia 2020: ch. 6). This paper concerns itself with the "passive/reflexive" prefix.[1] The examples in (1) (from Guarania 2008: 44) are all ambiguous between a passive and a reflexive reading.[2]

(1) a. Ange pyhare jerokyhápe ma'ẽra o*je*japi.
ange -pyhare jerokyhape ma'ẽra o-*je*-japi
last.night at.the.dance some.guy 3-JE-shoot
'Last night at the dance some guy was shot.' (or 'shot himself')

b. O*ñe*kytĩ ohakã'onguévo yvyrarakã.[3]
o-*je*-kytĩ ohakã'onguévo yvyrarakã
3-JE-cut while.was.removing.top tree.head
'(S)he cut himself/herself while trimming the tree.' (or 'was cut')

[†]I would like to thank the audience at HPSG 2025 for their comments and discussion, in particular Stefan Müller for pointing out some technical inaccuracies in my talk and for discussion of the appropriate formalization of selectional restrictions, and also two anonymous reviewers for highlighting remaining inconsistencies.

[1]Called "agent-demoting" voice in Estigarribia (2020: 208).

[2]When references are not given the examples are constructed by me. Glosses are simplified for readability and should not be taken as a complete morphological analysis. All verb stems are non-future by default: they are compatible with past or present. Paraguayan Guarani has nasal harmony and when relevant, footnotes will indicate conditioned alternations. Non-standard abbreviation: JE = derivational "middle" prefix.

[3]*Ñe-* is the harmonizing form of the prefix *je-* that is used with nasal bases.

Characterizing *je-* as passive/reflexive assumes a basic transitive scenario with differentiated ACTOR and UNDERGOER (Davis 2001, Davis, Koenig & Wechsler 2025). In strictly reflexive scenarios, actor and undergoer are conceptualized as distinct, and the action or event as externalized; in strict passives, there is a semantically understood external actor different from the undergoer.[4] Context often disambiguates between reflexive (2) and passive (3).

(2) Aime porãiterei a*ñe*mbosako'i día a día.[5] (reflexive)
aime porãiterei a-*je*-mbosako'i día a día
I.am extremely.well 1SG-JE-prepare every.day
'I am preparing myself very well every day.'

(3) Marihuana o*ñe*moambue so'o rehe.[6] (passive)
marihuana o-*je*-moambue so'o rehe
marihuana 3-JE-change.sth meat against
'Marihuana is being exchanged for meat.'

Uses of *je-* that are neither strict reflexives nor strict passives are also known (Velázquez-Castillo 2008, Estigarribia 2020, 2025). First, *je-* can apply to intransitive bases, both with agentive subjects (4a) and with non-agentive subjects (4b), expressing the occurrence of an event without reference to participants. The single argument is always interpreted as an indefinite human (or perhaps animate), similarly to *impersonals* (or "impersonal passives") in other languages (Blevins 2003, Müller 2003, Müller & Ørsnes 2013).

(4) a. Al fin o*je*sapukái. [7]
al -fin o-*je*-sapukái
finally 3-JE-scream
'A goal was finally celebrated.' (lit. 'Finally there was screaming')

b. Heta gueteri o*ñe*manovéta ndopáirõ la ñorairõ.
heta gueteri o-*je*-mano-ve-ta ndopáirõ la ñorairõ
much even 3-JE-die-more-FUT if.not.end the fight
'Even more dying will occur if the fight does not end.'
(Velázquez-Castillo 2008: 383)

This impersonal reading is also available for CORE TRANSITIVES (those with two terms, subject and direct object), as shown in (5), and obligatory for GOVERNED TRANSITIVES (those with one term, the subject, and one oblique) (6).[8]

[4] Notably, PG has agentless passives only.

[5] https://www.abc.com.py/especiales/remiandu/cabanas-aime-por-haimetema-100-227136.html, 2026-01-30.

[6] 'https://www.abc.com.py/especiales/remiandu/marihuana-onemoambue-soo-rehe-1404994.html, 2026-01-30.

[7] https://www.abc.com.py/especiales/remiandu/al-fin-ojesapukai-465515.html, 2026-01-30.

[8] I use Manning (1996)'s terminology, where a *term* is a direct or "core" argument of a predicate, as opposed to an oblique argument.

(5) ani hağua o*je*hecha ichupe tembiapovai apohára ramo[9]
ani hağua o-*je*-hecha ichupe tembiapovai apohára ramo
not for 3-JE-see him/her bad.work maker as
'so that people would not see him as someone who does bad things'

(6) Mbohapyha jey o*ñe*maña Alderete rehe pirapire jepokóre.[10]
mbohapyha jey o-*je*-maña Alderete rehe pirapire jepokóre
third time 3-JE-look.at Alderete at money for.touching
'They investigate Alderete for embezzlement for the third time.'

Additionally, in (7), we see that *je-* can give rise to AUTOCAUSATIVES (also ENDOREFLEXIVES Haspelmath 1987: 26) where an actor changes body position or location (Geniušienė 1987).

(7) o*ñe*mombo pe yva[11]
o-*je*-mombo pe yva
3-JE-throw that fruit
'they threw themselves upon the fruit'

(8) a*je*pepy
a-*je*-pepy
1SG-JE-bend.sth
'I bend (backwards), I straighten (myself)'
(Guasch & Ortiz 1998: 583)

Finally, ANTICAUSATIVES are events often interpreted as spontaneously occurring with an undergoer subject and no actor (9).

(9) a. Ovetã o*je*pe'a.
ovetã o-*je*-pe'a
window 3-JE-open.sth
'The window opened.' (Estigarribia 2020: 87)

b. Pe yvy o*ñe*monandiete.[12]
pe yvy o-*je*-monandi-ete
that ground 3-JE-empty.sth-very
'The ground emptied completely.'

This constellation of uses/interpretations is characteristic of what has been termed a "middle" marker (Inglese 2022, 2023, Inglese & Sansò 2023).[13] I will show that SBCG provides a natural framework to model this cluster of interpretations in Sections 3.2 and 3.3.

[9] https://gn.wikipedia.org/wiki/Hernán_Cortés, 2025-10-24.

[10] https://www.abc.com.py/especiales/remiandu/mbohapyha-jey-onemana-alderte-rehe-pirapire-jepokore-1048617.html, 2026-01-30.

[11] Renée Ferrer, 1996, short story "Táva Jokupyty remiñongatu".

[12] https://heraldsofhope.org/blog/all-episodes/nandejara-nembojovake/, 2026-01-30.

[13] There are also body-part incorporation uses that are not strictly reflexive but pseudo-reflexive, since there is no identity between agent and patient; I do not have the space to address those here.

2 Previous work on passives in HPSG

HPSG generally defines the passive as subject demotion instead of object promotion, with the "logical subject" (or first element of the ARG-ST list) realized as oblique or not at all (see Davis & Koenig 2025: 157). I will assume here without argument a non-canonical linking analysis where the ARG-ST list is changed by eliminating the subject term (see Davis, Koenig & Wechsler 2025). I will apply an analysis to the PG case that is similar to that in Müller & Ørsnes (2013) for Danish, German, and English passives: *je-* is a morphological marker (an affix as in Scandinavian *-s* passives, as opposed to an analytic construction), it suppresses the first term of the verb, and it has impersonal passive uses (like Scandinavian and German). The differences are that PG shows "middle-like" reflexive-passive syncretism (whereas Germanic languages have distinct morphosyntactic means for these two diatheses), there is no analytic passive (auxiliary+participle), and PG unaccusatives are not exempted (no need for a Germanic-style "designated argument").

3 SBCG analysis of *je*-derivation

I have chosen to use the formalism of SBCG rather than the more common HPSG formalism (see Müller 2025: for discussion of the differences). In particular, instead of lexical rules (lexeme-to-lexeme), I will use here the derivational construction mechanism to account for variable polyadicity of lexemes proposed in Sag (2012: 119) (10).

(10) *deriv-cxt*: $\begin{bmatrix} \textsc{mtr} & \textit{lexeme} \\ \textsc{dtrs} & \textit{list}\big(\textit{lex-sign}\big) \end{bmatrix}$

PG's default impersonal inflection *o-* (e.g., *o-ky* 'it rains' or *o-sunu* 'it thunders') will be relevant in what follows (11).

(11) $\begin{bmatrix} \textsc{form} & X \\ \textsc{arg-st} & \textit{list}\big(\textit{obliques}\big) \end{bmatrix} \Rightarrow \big[\textsc{form}\ \ o\text{-}X\big]$

My analysis of the lexical semantics of predicates is based on Davis (2001), and on Sag (2012: sec. 3.4) which suggests "flattened" semantic structures, except that I will use a Minimal Recursion Semantics representation, rather than a Frame Semantics approach. For example, the core transitive predicate *juka* 'to kill', will have the semantics in (12), where *kill-rel* is a subtype of *affect-ch-of-st-rel* (Davis 2001: 83), and SIT is a situational index corresponding to a Davidsonian event variable (Sag 2012: 89).

(12)
$$\begin{bmatrix} \textsc{form} & \textit{juka} \\ \textsc{arg-st} & \langle \mathrm{NP}_i, \mathrm{NP}_j \rangle \\ \textsc{sem} & \begin{bmatrix} \textsc{rels} & \left\langle \begin{bmatrix} \textit{kill-rel} \\ \textsc{label} & l \\ \textsc{sit} & s \\ \textsc{act} & i \\ \textsc{und} & j \\ \textsc{soa} & l' \end{bmatrix}, \begin{bmatrix} \textit{dead-rel} \\ \textsc{label} & l' \\ \textsc{p-bearer} & j \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

Prefixation of verb bases with only one term (monadic predicates or governed transitives) by *je-* always yields an impersonal interpretation, with any obliques "untouched".[14] *Je*-prefixation of core transitive bases yields impersonal, reflexive, passive, autocausative, and anticausative interpretations. In all cases *je-* only impacts the linking and argument realization of participants that are terms of the base predicate, but not those that are obliques. In impersonal cases, *je-* simply "de-links" the actor role from the subject, leaving all other links, if they exist, intact. Such de-linking is often called "subject demotion". In passives and anticausatives from core transitive bases, *je-* "de-links" the actor from the subject and additionally links the undergoer role to the subject. This additional linking effect is often called "object promotion". Finally, in reflexives and autocausatives from core transitive bases, there is linking of the undergoer to subject without de-linking of the actor. The common effect that *je*-prefixation has in all these cases is simply reducing by one the number of terms of the predicate, that is, eliminating one term from the ARG-ST list. I capture this with the constraint in (13).

(13) *je-deriv-cxt*:
$$\begin{bmatrix} \textsc{mtr} & \left[\textsc{arg-st}\ \boxed{1}\right] \\ \textsc{dtrs} & \left\langle \left[\textsc{arg-st}\ \langle \mathrm{NP} \rangle \oplus \boxed{1}\textit{list}\right] \right\rangle \end{bmatrix}$$

Thus, *je-* does not itself encode particular interpretations for *je-* forms. In order to understand and model how such interpretations arise, let's look first at what linking patterns are possible for valence-reduced *je*-prefixed predicates.

3.1 Linking affordances resulting from the *je*-derivation construction

For monadic and governed transitive bases, the term-reducing effect of *je-* leaves no terms (only possibly obliques) on ARG-ST, and since the actor can only be mapped to a term (to the subject, in fact), then we obtain an "impersonal subject" or "impersonal actor" interpretation.[15]

[14] Other interpretations, such as reflexive, require an independent reflexive postpositional pronoun without *je-*.

[15] I assume throughout that semantic roles are mapped to argument structure elements via the commonly accepted linking constraints in (14 on the following page) (Davis, Koenig & Wechsler 2025).

(14) a.
$$\begin{bmatrix} \textsc{content}|\textsc{key} & \begin{bmatrix}\textsc{act} & \boxed{1}\end{bmatrix} \\ \textsc{arg-st} & \left\langle \text{NP}_{\boxed{1}}, \ldots \right\rangle \end{bmatrix}$$

b.
$$\begin{bmatrix} \textsc{content}|\textsc{key} & \begin{bmatrix}\textsc{und} & \boxed{2}\end{bmatrix} \\ \textsc{arg-st} & \left\langle \ldots, \text{NP}_{\boxed{2}}, \ldots \right\rangle \end{bmatrix}$$

This effect is modeled in (15).

(15)
$$\begin{bmatrix} \textsc{mtr} & \begin{bmatrix} \textsc{form} & \textit{o-je-X} \\ \textsc{arg-st} & \left\langle\ \right\rangle \oplus \boxed{1} \\ \textsc{sem} & \boxed{2} \end{bmatrix} \\ \textsc{dtrs} & \left\langle \begin{bmatrix} \textsc{form} & X \\ \textsc{arg-st} & \left\langle \text{NP}_i \right\rangle \oplus \boxed{1} \textit{list}\left(\textit{obliques}\right) \\ \textsc{sem} & \boxed{2} \begin{bmatrix} \textsc{rels} & \left\langle \begin{bmatrix} \textit{act-rel} \\ \textsc{label} & l \\ \textsc{sit} & s \\ \textsc{act} & i \\ \left(\textsc{und}\ j\right) \\ \left(\textsc{soa}\ l'\right) \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

For core transitives there are 4 logical possibilities under valence reduction: (i) Linking actor to subject, not linking undergoer; (ii) Linking undergoer to subject, not linking actor; (iii) Linking both undergoer and actor to subject; (iv) Neither actor nor undergoer are linked.

Option (i) is not available. It would yield a reading where the agent is expressed and referential, but the undergoer is unexpressed. This use for *je-* is "pre-empted" by the antipassive prefixes *poro-* and *mba'e-* that encode events with generic undergoers (Estigarribia 2020: 213–215). This is why *je-* only targets the first element of ARG-ST in (13 on the previous page).

Linking undergoer to subject and not linking the actor yields a reading where the undergoer is expressed, but the agent is unexpressed. This is compatible with passive and anticausative uses, which both share the underspecified SBCG representation in (16), in which I assume $i \neq j$.

(16)
$$\begin{bmatrix} \textsc{form} & \textit{je-X} \\ \textsc{arg-st} & \left\langle \text{NP}_j \right\rangle \\ \textsc{sem}\,|\,\textsc{rels} & \left\langle \begin{bmatrix} \textit{act-und-rel} \\ \textsc{label} & l \\ \textsc{sit} & s \\ \textsc{act} & i \\ \textsc{und} & j \\ \left(\textsc{soa}\ l'\right) \end{bmatrix} \right\rangle \end{bmatrix}$$

Linking both undergoer and actor to subject yields a reading where both the agent and the undergoer are expressed and they are co-referential. This is compatible with reflexive and autocausative uses, which prima facie both share the underspecified SBCG representation in (17).

(17)
$$\begin{bmatrix} \textsc{form} & \textit{je-X} \\ \textsc{arg-st} & \langle \mathrm{NP}_i \rangle \\ \textsc{sem} \mid \textsc{rels} & \left\langle \begin{bmatrix} \textit{act-und-rel} \\ \textsc{label} & l \\ \textsc{sit} & s \\ \textsc{act} & i \\ \textsc{und} & i \\ (\textsc{soa} & l') \end{bmatrix} \right\rangle \end{bmatrix}$$

Finally, the configuration where neither role is linked to an argument is also possible: It is expressed by the prefix combinations *je-poro-* or *ñe-mba'e-* and yields a reading where both the agent and the undergoer are unexpressed and both are interpreted as generic/impersonal.

I propose that these linkage affordances are influenced by the lexical semantics of the base predicate and the resulting interpretations are determined fully only once the *je*-prefixed forms are used in context. Let's now examine how the different interpretations are arrived at and modeled.

3.2 How lexical semantics constrains possible interpretations

I will briefly note here the contribution of each base predicate's lexical semantics to the available interpretations. Take the core transitive predicate *ipuru* 'to use'. It selects for a first participant that controls the event (and is thus agent-like) and that uses a second participant to bring about the event (which is instrument-like). Instrument-like participants are most often inanimate things that an animate, volitional participant incorporates in an event to cause it. These two types of participants have a priori very low semantic compatibility, and therefore a reflexive or autocausative reading is predicted to be extremely difficult to obtain, if not downright impossible. Likewise, because an agent-like participant is semantically selected, anticausative "spontaneous event" interpretations are impossible. As predicted, *-jeipuru* only has documented passive uses in PG.

(18) a. umi patron kuera ikatu oheja o*je*ipuru N95[16]
umi patron kuera ikatu oheja o-*je*-ipuru N95
those boss PL be.able they.let 3-JE-use N95
'those managers can let N95 masks be used'

[16] https://www.osha.gov/sites/default/files/publications/OSHA4457.pdf, 2026-01-30.

b. mba'éichapa o*je*ipuru umi maquina jevotaha[17]
mba'éichapa o-*je*-ipuru umi máquina jevotaha
how 3-JE-use those machine voting
'how are voting machines used?'

It is an open question whether the facts of selectional restriction referred to here should be captured in the SEM(antic) structure or rather in the CONTEXT structure (Stefan Müller, p.c., 24 September 2025). For the purposes of this paper, following ideas in Androutsopoulos & Dale (2000), we can view such selectional facts as a subset of felicity conditions, often encoded in the value of CNTXT|BCKGRND.[18] The lexical entry for *ipuru* would be as in (19), indicating that a felicitous (or maybe "literal" is a better notion here) use of this verb expects the first participant to be animate and with control over the event (actor), and the second participant to be employed by the first like an instrument (undergoer).

(19)
$$\left[\begin{array}{ll}
\textsc{form} & \textit{ipuru} \\
\textsc{arg-st} & \left\langle \mathrm{NP}_i, \mathrm{NP}_j \right\rangle \\
\textsc{sem} \mid \textsc{rels} & \left\langle \left[\begin{array}{ll} \textit{act-und-rel} & \\ \textsc{label} & l \\ \textsc{sit} & s \\ \textsc{act} & i \\ \textsc{und} & j \end{array}\right] \right\rangle \\
\textsc{cntxt} \mid \textsc{bckgrnd} & \left\langle \left[\begin{array}{ll} \textit{animate-fr} & \\ \textsc{entity} & i \end{array}\right], \left[\begin{array}{ll} \textit{instrument-fr} & \\ \textsc{entity} & j \end{array}\right], \left[\begin{array}{ll} \textit{control-fr} & \\ \textsc{entity1} & i \\ \textsc{entity2} & j \end{array}\right] \right\rangle
\end{array}\right]$$

Remember that *je-* only has impersonal interpretations with one-term bases. Table 1 on the following page summarizes the possible interpretations of *je-* for the two-term predicates exemplified in this paper.[19] Note first that *je*-derivation can always yield impersonal interpretations. Second, all bases with two terms yield passive interpretations. A few bases only allow these two. Next, excepting these bases, a base either allows a reflexive interpretation or it allows autocausative and anticausative interpretations. These affordances are mutually exclusive because they depend on whether the base codifies an event as requiring an externalized causer (reflexive), or not, and therefore compatible with the absence of an externalized causer (autocausatives and anticausatives). For both autocausatives and anticausatives, the event is codified as happening completely internally to the only involved participant, whereas reflexives codify some sort of externalization

[17] https://www.facebook.com/reel/709167083824814, 2026-01-30.

[18] I am assuming that values of this attribute are of type *semantic frame*; see Sag (2012: 88) and also Lücking, Ginzburg & Cooper (2025).

[19] I have no direct evidence for the entries in parentheses, but I present them as possible interpretations given my non-native knowledge of PG.

of the event. Therefore, the availability of reflexive, autocausative, or anticausative readings is determined lexically by each base.

Table 1: Interpretations available for each two-term base in this paper

Base	refl	auto	pass	anti	imp
ipuru 'to use'			pass		imp
hesa'ỹjo 'to clarify'			pass		imp
japi 'to shoot'	refl		pass		imp
hayhu 'to love'	refl		pass		imp
mbosako'i 'to prepare'	refl		pass		imp
hecha 'to see'	refl		pass		imp
mbo'e 'to teach'	refl		pass		imp
hunga 'to injure'	refl		pass		imp
juka 'to kill'	refl		pass		imp
kytĩ 'to cut'	refl		pass	(anti)	imp
moambue 'to change'			pass	anti	imp
pepy 'to bend'		auto	pass	anti	imp
momombyry 'to move away'		auto	(pass)	(anti)	imp
pe'a 'to open'		(auto)	pass	anti	imp
monandi 'to empty'			pass	anti	imp

How to capture this in our analysis? In HPSG, reflexives and autocausatives are never differentiated in terms of their indexing of semantic roles: they both include a single index that is the value of ACTOR and UNDERGOER. Davis (2001: 105) proposes a *self-mot-rel* lexical semantic relation for verbs such as *run*, *jump*, and *shiver*, whose base form has an autocausative interpretation because it suggests a participant that moves volitionally (20).

(20)
$$\begin{bmatrix} \textit{self-mot-rel} \\ \text{ACT} \quad \boxed{1} \\ \text{UND} \quad \boxed{1} \\ \text{GRND} \end{bmatrix}$$

Is this approach applicable to autocausative interpretations that emerge as a result of a diathetic derivation? Take the case of *pepy* 'to bend'. This is a dyadic, change-of-state, core transitive verb; crucially, it has a motion semantic component and a cause semantic component (*caus-mot-rel*) (21).

(21)
$$\begin{bmatrix} \textit{caus-mot-rel} \\ \text{ACT} \\ \text{UND } \boxed{1} \\ \text{SOA} \begin{bmatrix} \textit{mot-rel} \\ \text{UND } \boxed{1} \\ \text{GRND} \begin{bmatrix} \textit{path} \\ \text{SOURCE} \\ \text{VIA} \\ \text{ENDPOINT} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The form *-jepepy* has an autocausative interpretation, 'to bend backwards, to straighten up', but is coindexing ACTOR and UNDERGOER as in (22) enough to differentiate this from a reflexive interpretation?

(22)
$$\begin{bmatrix} \textit{caus-mot-rel} \\ \text{ACT } \boxed{1} \\ \text{UND } \boxed{1} \\ \text{SOA} \begin{bmatrix} \textit{mot-rel} \\ \text{UND } \boxed{1} \\ \text{GRND} \begin{bmatrix} \textit{path} \\ \text{SOURCE} \\ \text{VIA} \\ \text{ENDPOINT} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The difference actually resides in whether the causation is externalized (reflexive: UNDERGOER conceptualized as differentiated from the ACTOR) or not (autocausative: UNDERGOER and ACTOR not differentiated). I propose that core transitive predicates that yield an autocausative interpretation have a semantics of type *cause-rel* (Davis 2001: 86) as in (23). This kind of predicate encodes an event conceived as a causer bringing about a state of affairs that is the result of a motion subevent, rather than an event conceived as a causer acting on an undergoer to bring about a state of affairs involving the undergoer.

(23)
$$\begin{bmatrix} \textit{cause-rel} \\ \text{ACT} \\ \text{SOA} \begin{bmatrix} \textit{mot-rel} \\ \text{UND} \\ \text{GRND} \begin{bmatrix} \textit{path} \\ \text{SOURCE} \\ \text{VIA} \\ \text{ENDPOINT} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Given this, a form like *apepy* 'I bend it', would have the representation in (24), where the indexing prefix *a-* indicates that the subject is 1sg and the object 3,

and where the semantics are that of the speaker bringing about a motion event involving a third person undergoer.

(24)
$$\begin{bmatrix} \textsc{form} & \textit{apepy} \\ \textsc{arg-st} & \langle \mathrm{NP}_{1sg}, \mathrm{NP}_3 \rangle \\ \textsc{sem} \mid \textsc{rels} & \left\langle \begin{bmatrix} \textit{cause-rel} \\ \textsc{act} \ \ \textit{1sg} \\ \textsc{soa} \ \ \begin{bmatrix} \textit{mot-rel} \\ \textsc{und} \ \ \textit{3} \\ \textsc{grnd} \ \ \boxed{\textit{path}} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Now, in a context where it is clear that only one participant is involved (no unexpressed but understood agent different from the expressed participant, see Section 3.3), the stem *-jepepy* has the representation in (25). Embedding the UND in the SOA structure models the lack of externalization of the causal action in autocausatives.

(25)
$$\begin{bmatrix} \textsc{form} & \textit{-jepepy} \\ \textsc{arg-st} & \langle \mathrm{NP}_i \rangle \\ \textsc{sem} \mid \textsc{rels} & \left\langle \begin{bmatrix} \textit{cause-rel} \\ \textsc{act} \ \ i \\ \textsc{soa} \ \ \begin{bmatrix} \textit{mot-rel} \\ \textsc{und} \ \ i \\ \textsc{grnd} \ \ \boxed{\textit{path}} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

We can "flatten" these semantic structures in order to make them consistent with the choices made in SBCG following the choices advocated for in Minimal Recursion Semantics.

(26)
$$\begin{bmatrix} \textit{cause-rel} \\ \textsc{act} \ \ \textit{index} \\ \textsc{soa} \ \ \begin{bmatrix} \textit{mot-rel} \\ \textsc{und} \ \ \textit{index} \\ \textsc{grnd} \ \ \boxed{\textit{path}} \end{bmatrix} \end{bmatrix} \equiv \begin{bmatrix} \textit{cause-rel} \\ \textsc{label} \ \ l \\ \textsc{sit} \ \ s \\ \textsc{act} \ \ \textit{index} \\ \textsc{soa} \ \ l' \end{bmatrix}, \begin{bmatrix} \textit{mot-rel} \\ \textsc{label} \ \ l' \\ \textsc{und} \ \ \textit{index} \\ \textsc{grnd} \ \ \boxed{\textit{path}} \end{bmatrix}$$

Let's look at the difference between *hunga* 'to injure', which can yield a reflexive interpretation under *je*-prefixation, and *pepy* 'to bend', which can yield an autocausative one.

(27)
$$\begin{bmatrix} \textsc{form} & \textit{-jehunga} \\ \textsc{arg-st} & \langle \mathrm{NP}_i \rangle \\ \textsc{sem} \mid \textsc{rels} & \left\langle \begin{bmatrix} \textit{cause-ch-of-st-rel} \\ \textsc{label} \; l \\ \textsc{sit} \; s \\ \textsc{act} \; i \\ \textsc{und} \; i \\ \textsc{soa} \; l' \end{bmatrix}, \begin{bmatrix} \textit{injured-rel} \\ \textsc{label} \; l' \\ \textsc{p-bearer} \; i \end{bmatrix} \right\rangle \end{bmatrix}$$

(28)
$$\begin{bmatrix} \textsc{form} & \textit{-jepepy} \\ \textsc{arg-st} & \langle \mathrm{NP}_i \rangle \\ \textsc{sem} \mid \textsc{rels} & \left\langle \begin{bmatrix} \textit{cause-rel} \\ \textsc{label} \; l \\ \textsc{sit} \; s \\ \textsc{act} \; i \\ \textsc{soa} \; l' \end{bmatrix}, \begin{bmatrix} \textit{bend-rel} \\ \textsc{label} \; l' \\ \textsc{und} \; i \\ \textsc{grnd} \; [\textit{path}] \end{bmatrix} \right\rangle \end{bmatrix}$$

The different semantic structures for the base predicates explain why reflexive and autocausative interpretations are mutually exclusive.

3.3 Emergence of interpretations of the *je*-derivation construction in context

3.3.1 Reflexive-passive ambiguities

Out-of-context *je-* forms most often are ambiguous between a passive and a reflexive reading, as I mentioned in Section 1 on page 1. I exemplify again with the form *-ñehunga* in (29) and its corresponding description in (30).

(29) *-ñe*hunga
je-hunga
JE-injure
'to be injured' or 'to injure oneself'

(30)
$$\begin{bmatrix} \textsc{form} & \textit{-je-hunga} \\ \textsc{arg-st} & \langle \mathrm{NP}_i \rangle \\ \textsc{sem} \mid \textsc{rels} & \left\langle \begin{bmatrix} \textit{cause-ch-of-st-rel} \\ \textsc{label} \; l \\ \textsc{sit} \; s \\ \textsc{act} \; \textit{index} \\ \textsc{und} \; i \\ \textsc{soa} \; l' \end{bmatrix}, \begin{bmatrix} \textit{injured-rel} \\ \textsc{label} \; l' \\ \textsc{p-bearer} \; i \end{bmatrix} \right\rangle \end{bmatrix}$$

In context, the form *-ñehunga* resolves to one of the two possible interpretations: reflexive in (31a) passive in (31b).

(31) a. nderyeguasúrõ anínte reguata puku ani hağua re*ñe*hunga[20]
nderyeguasúrõ anínte reguata puku ani hağua re-*je*-hunga
if.you.are.pregnant just.don't you.walk long not for 2SG-JE-injure
'if you are pregnant do not take long walks so as not to injure yourself'

b. mbohapy tapicha o*ñe*hunga vaipaite okúivo óga hoja ha'éva peteĩ estructura metálica[21]
mbohapy tapicha o-*je*-hunga vaipaite okúivo óga
three person 3-JE-injure very.badly when.it.detached house
hoja ha'éva peteĩ estructura metálica
sheet that.is one structure metallic
'three people were injured very badly when a house sheet got detached (and fell) from a metal structure'

In (31a), the context before *reñehunga* establishes that the addressee is a woman *w*, that *w* is the continuous topic of the discourse, and introduces a possible world where:

- *w* is pregnant
- *w* takes a long walk
- the (undesirable) result of the long walk taken is…

This is the state of the context when *reñehunga* (2SG-JE-injure) is uttered. This explains why the most likely interpretation of *reñehunga* in that discourse is reflexive. In (32) I provide a simplified attempt to model this interpretation by availing myself of the CONTEXT (CNTXT) attribute, including CONTEXTUAL INDICES (C-INDS) that specify contextual elements relevant for indexicality and deixis, and a BACKGROUND (BCKGRND) attribute that is a list of propositions broadly understood to encode felicity conditions.[22] Crucially, the passive interpretation is not impossible, it is only less natural ('if you are pregnant do not take long walks so as not to be injured by someone else').

[20] https://www.facebook.com/share/p/16sxNbgfqZ/, 2026-01-30.

[21] https://www.abc.com.py/especiales/remiandu/ara-vai-ama-ha-yvytu-hat-rire-1684775.html, 2026-01-30.

[22] As in example (19 on page 8), felicity conditions are modeled as semantic frames (*-fr*). The information that these predications that are part of the value of BACKGROUND are part of a possible world introduced by the conditional is not represented here. I am currently investigating the possibility to model this within TTR (*Type Theory with Records*; Lücking, Ginzburg & Cooper 2025).

(32)
$$\begin{bmatrix} \textit{phrase} \\ \textsc{form} & \textit{Nderyeguasúrõ anínte reguata puku ani hağua re-je-hunga} \\ \textsc{sem} \mid \textsc{rels} & \left\langle \begin{bmatrix} \textit{cause-ch-of-st-rel} \\ \textsc{label} & l \\ \textsc{sit} & s \\ \textsc{act} & w \\ \textsc{und} & w \\ \textsc{soa} & l' \end{bmatrix}, \begin{bmatrix} \textit{injured-rel} \\ \textsc{label} & l' \\ \textsc{p-bearer} & w \end{bmatrix} \right\rangle \\ \textsc{cntxt} & \begin{bmatrix} \textit{context} \\ \textsc{c-inds} & \begin{bmatrix} \textsc{spkr} & a \\ \textsc{addr} & w \\ \textsc{topic} & w \end{bmatrix} \\ \textsc{bckgrnd} & \left\langle \boxed{1} \oplus \boxed{2} \oplus \boxed{3} \oplus \boxed{4} \right\rangle \end{bmatrix} \end{bmatrix}$$

where

$$\boxed{1}\begin{bmatrix} \textit{woman-fr} \\ \textsc{entity} & w \end{bmatrix}$$

$$\boxed{2}\begin{bmatrix} \textit{pregnant-fr} \\ \textsc{entity} & w \end{bmatrix}$$

$$\boxed{3}\begin{bmatrix} \textit{has-walked-long-fr} \\ \textsc{entity} & w \end{bmatrix}$$

$$\boxed{4}\begin{bmatrix} \textit{result-fr} \\ \textsc{soa} & \begin{bmatrix} \textit{injured-fr} \\ \textsc{entity} & w \end{bmatrix} \end{bmatrix}.$$

In (31b on the previous page), on the other hand, the initial sequence *Mbohapy tapicha oñehunga (vaipaite)* is reflexive/passive ambiguous (33a). Resolution of the ambiguity in favor of the passive occurs only once the subordinate clause *okúivo óga hoja ha'éva peteĩ estructura metálica* 'when a house sheet got detached (and fell) from a metal structure' is uttered, because this clause clearly indicates a cause external to the participants. I attempt a very simplified first approach to how this resolution would work in (33b), again using the CONTEXT values. The subordinate clause *okúivo óga hoja ha'éva peteĩ estructura metálica* contains the temporal subordinator simultaneity suffix *-vo* 'when, as'. The subordinator marks it as an adjunct to the main clause predicate, and the contribution to the semantics is that of simultaneity with the eventuality encoded by the main predicate. This simultaneity, together with world knowledge about events of falling, especially those including metallic objects, furthers the passive interpretation where it is the falling (or some aspect thereof) that is the cause of the injury event.

(33) a.
$$\begin{bmatrix} \textit{phrase} \\ \textsc{form} & \textit{mbohapy tapicha o-je-hunga} \\ \textsc{sem} \mid \textsc{rels} & \left\langle \begin{bmatrix} \textit{cause-ch-of-st-rel} \\ \textsc{label} & l \\ \textsc{sit} & s \\ \textsc{act} & i \\ \textsc{und} & j \\ \textsc{soa} & l' \end{bmatrix}, \begin{bmatrix} \textit{injured-rel} \\ \textsc{label} & l' \\ \textsc{p-bearer} & j \end{bmatrix} \right\rangle \\ \textsc{cntxt} \mid \textsc{c-inds} & \begin{bmatrix} \textit{individual-fr} \\ \textsc{entity} & j \\ \textsc{index} & \textit{3pl} \\ \textsc{name} & \textit{three people} \end{bmatrix} \end{bmatrix}$$

b.
$$\begin{bmatrix} \textit{phrase} \\ \textsc{form} & \textit{mbohapy tapicha o-je-hunga okúivo...metálica} \\ \textsc{sem} \mid \textsc{rels} & \left\langle \begin{bmatrix} \textit{cause-ch-of-st-rel} \\ \textsc{label} & l \\ \textsc{sit} & s \\ \textsc{act} & \boxed{2} \\ \textsc{und} & j \\ \textsc{soa} & l' \end{bmatrix}, \begin{bmatrix} \textit{injured-rel} \\ \textsc{label} & l' \\ \textsc{p-bearer} & j \end{bmatrix} \right\rangle \\ \textsc{cntxt} & \begin{bmatrix} \textsc{c-inds} & \begin{bmatrix} \textit{individual-fr} \\ \textsc{entity} & j \\ \textsc{index} & \textit{3pl} \\ \textsc{name} & \textit{three people} \end{bmatrix} \\ \textsc{bckgrnd} & \left\langle \boxed{1} \oplus \boxed{2} \oplus \boxed{3} \right\rangle \end{bmatrix} \end{bmatrix}$$

where

$$\boxed{1}\begin{bmatrix} \textit{detached-fr} \\ \textsc{entity} & i \end{bmatrix}$$

$$\boxed{2}\begin{bmatrix} \textit{result-fr} \\ \textsc{soa} & \begin{bmatrix} \textit{fallen-fr} \\ \textsc{entity} & i \end{bmatrix} \end{bmatrix}$$

$$\boxed{3}\begin{bmatrix} \textit{simultaneity-fr} \\ \textsc{soa} & l' \\ \textsc{soa} & \boxed{2} \end{bmatrix}.$$

Of course, this explanation is highly simplified and the technical details remain to be sorted out but the general idea is that *je-* itself is rather largely underspecified as to the resulting interpretations, which are a result of the interplay of lexical semantic information and contextual information.

3.3.2 Anticausative-passive ambiguities

The form *oñemonandi* '3-je-empty' is ambiguous between the anticausative interpretation 'it emptied (by itself)' and the passive interpretation 'it was emptied (by someone)'. In (34a), the anticausative is suggested by the fact that the events are purposefully presented as happening by themselves, whereas in (34b), the context of embezzlement furthers the passive interpretation that the bank was emptied by someone.

(34) a. Ha ha'e he'i: Umi tavaguasu o*ñe*monandi, ha opytapa peve avave'ỹre, ha umi óga kuimba'e'ỹre, ha pe yvy ha'eñoreipa[23]
ha ha'e he'i umi tavaguasu o-*je*-monandi ha opytapa peve
and he said those city 3-JE-CAUS-empty and remain.all until
avave'ỹre ha umi óga kuimba'e'ỹre ha pe yvy
without.more.people and those house without.man and that ground
ha'eñoreipa
alone.in.vain.all
'And he [God] said: until those cities empty and until they all remain without people and those houses without men and the land completely desolate'

b. O*ñe*monandi pyahu piko Multibanco![24]
o-*je*-monandi pyahu piko Multibanco
3-JE-empty new Q Multibanco
'Multibanco was recently emptied! (by embezzlers)'

I am not providing formal analyses of these cases: they seem to me squarely of a pragmatic nature and rather technically involved for the space I have in this paper. The treatment of such pragmatic effects requires a more careful analysis than what I can provide here, perhaps taking advantage of the *Dialogue Game Boards* framework proposed in Ginzburg (2012).

4 Conclusion

The analysis of middle markers is notoriously complex. I have shown how we can employ the theoretical apparatus of HPSG and its descendant framework SBCG to rein in the "explosion" of middle cluster interpretations.

[23] https://www.churchofjesuschrist.org/study/scriptures/bofm/2-ne/16?lang=grn, 2026-01-30.

[24] https://www.abc.com.py/especiales/remiandu/onemonandi-pyahu-piko-multibanco-1080984.html, 2026-01-30.

Underspecification is a key property of HPSG and it is crucial here. Instead of imbuing *je-* with a reflexive function, a passive voice function, and all the other attendant functions proper of a middle voice cluster, I model *je-* simply as an argument reducer, as is customary for passives in HPSG. Separating argument expression effects, linking affordances, and resolved interpretations allows us to have a principled analysis: *Je-* reduces the number of terms (direct arguments) by 1, general linking constraints and the specific lexical semantics of each base predicate determine what linking patterns are possible for monadic and dyadic predicates with only one expressed argument (subject), and contextual information resolves any remaining ambiguities in interpretation.

So the take-home is that there isn't a "reflexive" *je-*, a "passive" *je-*, an "impersonal" *je-*, etc. Rather, *je-* does one and only one thing: reducing a predicate's number of direct arguments by one. The rest is done by the grammar of linking and by the rules of context-dependent interpretation. This prevents an "explosion" of types of *je-* where we would have a reflexive *je-*, an impersonal *je-*, a passive *je-*, an anticausative *je-*, and an autocausative *je-*.[25] Finally, I believe this analysis also sets the stage for a clearer, more principled account of the development of these clusters of functions, which in PG all arise from an original Tupi-Guarani reflexive-only prefix (Estigarribia 2025).

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[25] This situation is commonly found in the analysis of Spanish which is considered to have about a dozen types of *se*: middle *se*, agentive *se*, transitive *se*, antipassive *se*, etc (see Fábregas 2021).

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