An HPSG account of coded causal–noncausal verb pairs

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Abstract

This paper presents a constructional account of causative-noncausative verb pairs where either the causative or the noncausative variant is coded. In contrast to traditional HPSG accounts where lexical entries are assumed to have detailed information about their syntactic surroundings, lexical entries are assumed, which are underspecified with regard to whether they are causal or noncausal. It is rather the morpho-syntactic structures they appear in, which determine their construction type.

1 Introduction

Haspelmath *et al.* (2014) investigates the connection between frequency and coding of verb pairs like *raise*/*rise*, and *break* (transitive) and *break* (intransitive) in seven languages where the causative-noncausative distinction is coded, and they show that when the noncausative use is more frequent (*freeze*, *dry*, *melt*), the causative variant has a tendency to require extra (causative) coding. When on the other hand the causative use is more frequent (*break*, *open*, *split*), the anticausative variant has a tendency to require extra (anticausative) coding. This is illustrated in example (1) (from Haspelmath *et al.* (2014, 588)) where the verb *freeze* has causative coding when it is used transitively, and the verb *break* has anticausative coding when it is used intransitively.

		CAUSAL	NONCAUSAL
	Japanese	*koor-**ase**-*	*koor*
	Swahili	*gand-**isha***	*ganda*
(1)		'freeze (tr.)'	'freeze (intr)'
	Japanese	*war-*	*war-**e**-*
	Swahili	*vunja*	*vunj-**ika***
		'break (tr.)'	'break (intr.)'

As pointed out in Wechsler *et al.* (2021, xxx), this kind of data counts against the lexical rule approach to causative-noncausative verb pairs since it is hard to determine which variant should serve as root and which variant should serve as derived. Especially the anticausative coding is a challenge to the lexical rule approach since it implies that information (a causative relation) is removed. This would not be allowed in HPSG since semantic composition in feature structures only allows for information to be added, not changed or removed. The solution therefore seems to be to assume separate lexical entries for the two variants. This is however not a perfect solution, since it means that the relation between the variants is not captured.

In the following sections I will outline a constructional approach which makes it possible to capture generalizations over causative-noncausative verb pairs in underspecified lexical entries.

2 A constructional approach

Contrary to the common assumption in HPSG that a lexical entry is specified with detailed information about the syntactic surroundings, including the argument structure, I will in this paper assume that lexical entries can be underspecified with regard to valence and even category. In this sense, it is assumed that words are “plugged” into different phrasal constructions, which determine the category, argument structure, and even constrain the semantic content. This is in line with Construction Grammar (Goldberg, 1995, 2006) and more radical constructionist approaches (Borer, 2005a,b).

Constructional approaches to argument structure have been criticized for their lack of specificity with regard to how arguments in a construction are realized. Either one has to assume flat syntactic structures, which Müller (2006) shows is unfeasible, due to scrambling and adjunct insertions in German. The other option is to assume argument structure constructions which link grammatical features to arguments without committing to a particular linear order. This, again, is not worked out in detail, according to Müller and Wechsler (2014, 10).

Another argument against constructional approaches is that they cannot account for selectional restrictions (Müller and Wechsler, 2014, 38–41). If a word is completely underspecified with regard to its argument structure, how can we specify that the verb *depend* requires the preposition *on*?

3 A subconstructional approach

Haugereid (2009, 2014) shows how scrambling, adjunct insertion as well as selectional restrictions can be accounted for by means of a hierarchy of subconstruction types and a set of phrasal subconstructions. In the following, it will be shown how also generalizations about the variants shown in (1) can be captured within a subconstructional approach.

In the subconstructional approach, the lexical entry for the verb *freeze* is assumed to have the information in Figure 1.

$$\begin{bmatrix} \textit{lexeme} & \\ \text{ORTH} & \left\langle \textit{freeze} \right\rangle \\ \text{KEYREL} & \begin{bmatrix} \text{PRED} & \textit{freeze\_prd} \end{bmatrix} \end{bmatrix}$$

Figure 1: Lexical entry for *freeze*

The lexical entry has no valence features. It only has a list with the ORTHography and a KEYREL|PRED value, which is the subconstruction type *freeze_prd*. It is the position of this subconstruction type in a hierarchy of subconstruction types and construction types, that determines what argument frames the verb can enter (or be “plugged” into). This is illustrated in Figure 2.

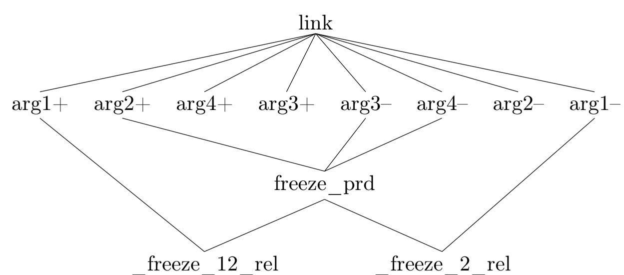

Figure 2: Type hierarchy with the subconstruction type *freeze_prd*

The hierarchy in Figure 2 has argument linking subconstruction types directly under *link*. The types *arg1+/–* tell whether or not an agentive argument is realized. The types *arg2+/–* tell whether a patient/theme argument is realized. The types *arg3+/–* tell whether a recipient/beneficiary argument is realized. And the types *arg4+/–* tell whether an oblique

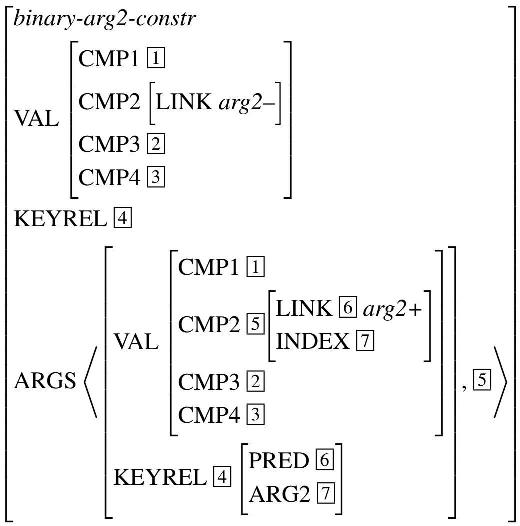

Figure 3: Rule for realizing CMP2 (patient/theme) arguments

argument is realized. A regular transitive clause therefore will have the types *arg1+*, *arg2+*, *arg3–*, and *arg4–*. A simplified version of the rule that realizes the CMP2 (patient/theme) argument is illustrated in Figure 3. The rule switches the subconstruction type for CMP2 from positive in the first daughter to negative in the mother. The positive subconstruction type *arg2+* is unified with the KEYREL|PRED value. The rule also links the index of the second daughter with the KEYREL|ARG2.

The clause is parsed incrementally, as shown in Figure 4, and at the end of the parse, the linking types are unified. In addition to the linking types, the verb contributes a subconstruction type. The verb *freeze* has the subconstruction type *freeze_prd*. When this type is unified with the linking types from the realized arguments, it is forced into a subtype which is a construction type. In a transitive clause, this construction type is *_freeze_arg12_rel*. If the clause is intransitive, the construction type is *_freeze_arg2_rel*. (see Figure 2).

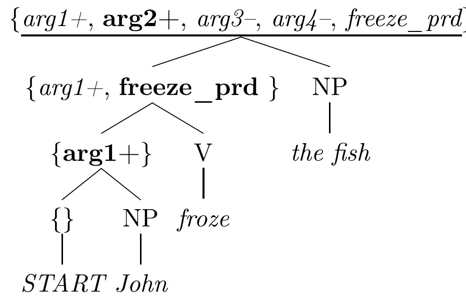

Figure 4: Illustration of the realization of subconstruction types in a transitive clause

It is the decomposition of constructions into subconstructions like *binary-arg2-constr* in Figure 3 that gives the approach the flexibility to allow for underspecified lexical entries without resorting to flat syntactic structures or argument structure constructions.

4 An account of coded causal-noncausal verb pairs

In order to account for the phenomena in (1), which unlike English show causative coding for some verbs and anticausative coding for some verbs, I assume the hierarchy of (sub)construction types in Figure 5.

Together with the subconstruction type hierarchy in Figure 5, the causative coding of *freeze* and anticausative coding of *break* in Japanese and Swahili can be analyzed with the lexical rules in Figures 6–8.

In Figure 6, the causative suffix *isha* is added. The rule takes as input a lexeme, and derives a new lexeme which is constrained to have the subconstructions *arg1+* and *arg2+*, which means that the verb is only compatible with a transitive structure. If the verb *gand* 'freeze' undergoes this lexical rule, the subconstruction types *arg1+*, *arg2+*, and *freeze_prd* are unified, and we get the construction type *_freeze_12_rel*.

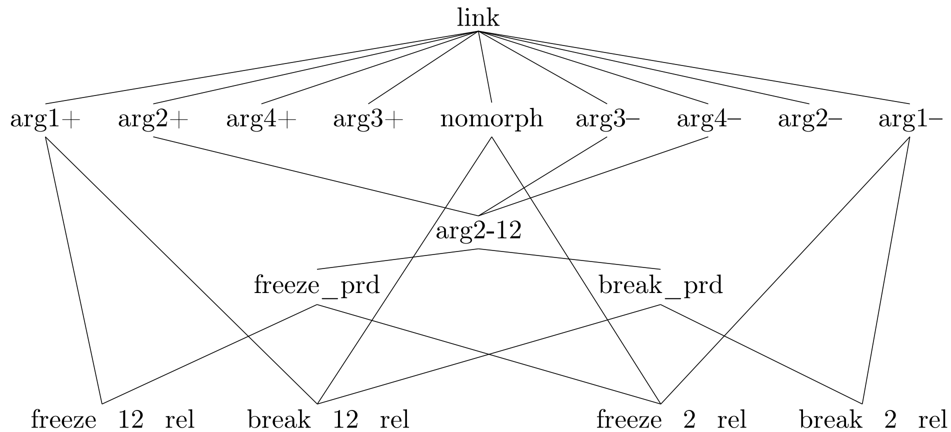

Figure 5: The subconstruction types *freeze_prd* and *break_prd* in Japanese and Swahili

$$\begin{bmatrix} \textit{caus-lex-rule} & \\ \text{ORTH} & \boxed{1} \oplus \left\langle \textit{isha} \right\rangle \\ \text{KEYREL} & \begin{bmatrix}\text{PRED } \boxed{2}\ \textit{arg1+} \wedge \textit{arg2+}\end{bmatrix} \\ \text{ARGS} & \left\langle \begin{bmatrix} \textit{lexeme} & \\ \text{ORTH} & \boxed{1} \\ \text{KEYREL} & \begin{bmatrix}\text{PRED } \boxed{2}\end{bmatrix}\end{bmatrix} \right\rangle \end{bmatrix}$$

Figure 6: Causative lexical rule for Swahili

$$\begin{bmatrix} \textit{anticaus-lex-rule} & \\ \text{ORTH} & \boxed{1} \oplus \left\langle \textit{ika} \right\rangle \\ \text{KEYREL} & \begin{bmatrix}\text{PRED } \boxed{2}\ \textit{arg1–} \wedge \textit{arg2+}\end{bmatrix} \\ \text{ARGS} & \left\langle \begin{bmatrix} \textit{lexeme} & \\ \text{ORTH} & \boxed{1} \\ \text{KEYREL} & \begin{bmatrix}\text{PRED } \boxed{2}\end{bmatrix}\end{bmatrix} \right\rangle \end{bmatrix}$$

Figure 7: Anticausative lexical rule for Swahili

In Figure 7, the anticausative suffix *ika* is added. Also this rule takes as input a lexeme, and it derives a new lexeme which is constrained to have the subconstructions *arg1–* and *arg2+*, which means that the verb is compatible with an intransitive structure. If the verb *vunja* 'break' enters this lexical rule, the subconstruction types *arg1–*, *arg2+*, and *break_prd* are unified, resulting in the construction type *_break_2_rel*.

In addition to the two inflectional lexical rules, there is a non-inflectional lexical rule shown in Figure 8.[1]

In Figure 8, no inflection is added. However, the lexeme is constrained to have the subconstruction type *nomorph*. This means that it will be compatible with both causative and non-causative constructions. But the type hierarchy of subconstruction types ensures that the rule does not apply to constructions

[1]The non-inflectional lexical rule can be avoided by adding a feature with a value *nomorph* to the base lexical entries which is unified with the KEYREL value of the lexical item when it enters the syntax. The *nomorph* value would then not be carried over to the mother in the inflectional lexical rules.

$$\begin{bmatrix} \textit{non-infl-lex-rule} & \\ \text{ORTH} & \boxed{1} \\ \text{KEYREL} & \begin{bmatrix}\text{PRED}\ \boxed{2}\ \textit{nomorph} \wedge \textit{arg2+}\end{bmatrix} \\ \text{ARGS} & \left\langle \begin{bmatrix} \textit{lexeme} & \\ \text{ORTH} & \boxed{1} \\ \text{KEYREL} & \begin{bmatrix}\text{PRED}\ \boxed{2}\end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Figure 8: Non-inflectional lexical rule

where an affix is required. As shown in Figure 5, the *nomorph* is not compatible with the construction types *_freeze_12_rel* and *_break_2_rel*, so in order to enter these constructions, the inflectional rules are required. Instead, the rule is compatible with the frequent uses of the verbs, the *_freeze_2_rel* and *_break_12_rel* constructions.

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