

The argument structure of causatives

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I explore the consequences – for a theory of argument structure mappings – of the assumption that causativisation adds an additional participant to an event: a new causer. It is logically possible that an additional causer can be added to any event: a semantically intransitive, or transitive, or ditransitive event; or a semantically unaccusative or unergative event. The operation of adding a causer can be realised via a lexical process without any morphological exponent; a productive morphological process (such as affixation); or a syntactic process (periphrastic/analytic realisation). For any type of realisation, it seems crucial to establish whether the causative construction is monoclausal or biclausal, that is, whether there is an internal clause boundary within the construction and whether as a result the construction has two subjects rather than one. A biclausal causative does not pose a problem for LFG: it has been analysed as having two PREDs, which represent two events, and which share an argument. A monoclausal causative has so far been represented in LFG using informal and poorly understood operations of ‘predicate composition’ and ‘argument fusion’. I argue that there are good reasons to abandon these operations, and demonstrate that the recent version of LFG’s Mapping Theory can handle the addition of a causer to a single event in much the same way as it handles other argument operations which affect the semantics of the predicate. The addition of a new participant to a single event causes a similar re-alignment of participants and argument positions to that found in applicatives and in a variety of non-applicative argument alternations including dative shift. I demonstrate how to capture this re-alignment. The argument-to-function mappings are handled with the standard tools of the Mapping Theory (for an overview of the textbook version of LFG’s mapping theory and details of its subsequent revisions see, e.g. Kibort 2007, 2008, 2013, 2014; Kibort and Maling 2015).

The realisation of causatives

In the simplified representations below, I refer to the participants of the event as follows:

- x = the highest semantic participant (actor/agent or experiencer) of the base predicate
- y = the second highest/core participant (undergoer/patient/theme) of the base predicate
- b = the third semantic participant (beneficiary/recipient) of ditransitive predicates
- z = a peripheral semantic participant typically expressed through an oblique argument
- c = an external causer participant added to the base event

(a) Monoclausal ‘lexical’ causativisation

Following Kroeger (2004: 193), I identify this type of causative as a construction in which the basic verb may “include the sense of causation as a part of its semantic content”. I propose that examples of productive (even though restricted) lexical causativisation involve labile verbs (in the narrow sense of Letuchiy 2009) which participate in alternations such as the following two listed by Levin (1993: 31-32) for English: the ‘Induced Action Alternation’ e.g. *The horse jumped over the fence* ~ *Sylvia jumped the horse over the fence* and ‘Other Instances of Causative Alternation’ e.g. *The baby burped* ~ *I burped the baby*; *The bell rang* ~ *The visitor rang the bell*. (Note also that in English the anticausative – or causative/inchoative – alternation is also lexical and it is possible to analyse it in the same way as lexical causativisation, rather than as anticausativisation.)

In a model of argument structure – or a model of semantic valency interfaced with syntactic valency – we want to be able to add a causer to the base meaning of these predicates productively. The following is a simplified representation of semantic and syntactic valency changes in lexical causatives:

non-causativised	causativised	
< x >	< c x >	= single (complex) event
SUBJ	SUBJ OBJ	= single PRED with new causer c=SUBJ

As far as I know, there is no LFG account that integrates lexical causatives identified as above into a comprehensive theory of argument alternations and argument mapping. Kroeger (2004: 215) decides to “simply assume that lexical causatives have the same basic argument structure as underived predicates”, which is a good solution but only for non-productive causatives (e.g. *eat* ~ *feed*; *sit* ~ *seat*).

(b) Monoclausal ‘morphological’ causativisation

This type of causative is a construction with a causative verb derived from a basic verb through a regular morphological process, e.g. affixation. The linguistic literature abounds in examples, and the following simplified representations of *typical* semantic and syntactic valency changes in morphological causatives can be matched with specific linguistic examples from Turkish, Swahili, and Malayalam, cited in Kroeger (2004: 194-211; after other authors):

non-causativised	causativised	
intransitive		
< x > SUBJ	< c x > SUBJ OBJ	e.g. Turkish, Swahili, Malayalam x=OBJ
transitive		
< x y > SUBJ OBJ	< c x y > SUBJ OBJ OBJθ	Swahili: x=OBJ, y=OBJθ
	< c y x > SUBJ OBJ OBJθ	Turkish: x=OBJθ, y=OBJ
	< c y x > SUBJ OBJ OBLθ	Malayalam: x=OBLθ, y=OBJ

Some languages with morphological causatives allow them to be derived from basic ditransitive verbs:

< x y b > SUBJ OBJ OBJθ	< c y b x > SUBJ OBJ OBJθ OBLθ	Turkish, Malayalam: x=OBLθ, y=OBJ, b=OBJθ
< x y b > SUBJ OBJ OBLθ	< c y b x > SUBJ OBJ OBLθ OBLθ	(predicted by the model; looking for an ex.): x=OBLθ, y=OBJ, b=OBLθ
< x b y > SUBJ OBJ OBJθ	< c x b y > SUBJ OBJ OBJθ OBJθ	Swahili: x=OBJ, y=OBJθ, b=OBJθ

Comrie (1981) argues that the grammatical function of the causee (**x**) in languages like Turkish (i.e. languages with canonical datives) can be predicted from Keenan and Comrie’s (1977) Noun Phrase Accessibility Hierarchy presumed to be universal in nominative-accusative systems (SUBJ > OBJ > OBJθ > OBL > possessor NP > object of comparison): the causee will get the highest function on the hierarchy which is not part of the subcategorisation of the base verb, i.e. the ‘next available GF’ (Kroeger 2004: 201-202). Therefore, in some classes of base verbs which subcategorise for SUBJ and OBJθ, or SUBJ and OBLθ, the causee is mapped to OBJ:

< x b > SUBJ OBJθ	< c x b > SUBJ OBJ OBJθ	Turkish: x=OBJ, b=OBJθ
< x z > SUBJ OBLθ	< c x z > SUBJ OBJ OBLθ	Malayalam: x=OBJ, z=OBLθ

Furthermore, causation may include different concepts (direct vs indirect/mediated causation; coercion vs permission; manipulation vs verbal direction), and a language may have distinct causative strategies to express these different distinctions (e.g. Malayalam). Regarding grammatical function assignment, a language may use a different grammatical function for the causee depending on the type of causation; and in South Asian languages morphological causatives from transitive roots of ingestion and perception likewise follow the casemarking of intransitive roots (i.e. the causee is, or may be, an ACC direct object). The last two observations point to the possibility of alternations in the assignment of grammatical functions to the arguments, with some change in meaning. An example from Malayalam (T. Mohanan, cited in Kroeger 2004: 207, 216), with (1a) used for instruction, and (1b) for manipulation:

- (1) a. *amma kuttiye-kkontə maanna tinnik'k'um* x=OBLθ
 mother(NOM) child(ACC)-with mango eat-CAUS-FUT (the so-called
 'Mother will have the mango eaten by the child.' 'morphological' causative)
- b. *amma kuttiye maanna tiittum* x=OBJ
 mother(NOM) child-ACC mango eat-CAUS-FUT (the so-called
 'Mother will feed the child a mango.' 'lexical' causative)

Below are examples of full argument structure representations corresponding to (1a-b); these arise in accordance with the argument-to-function mapping principles of the Mapping Theory (see the early proposals e.g. Bresnan and Kanerva 1989, and later revisions e.g. Kibort 2007, 2013, Kibort and Maling 2015):

- (2) a. c y x causee as an oblique
 < arg1 arg2 arg4 >
 [-o] [-r] [-o]
 SUBJ OBJ OBLθ
- b. c x y causee as a core argument
 < arg1 arg2 arg3 >
 [-o] [-r] [+o]
 SUBJ OBJ OBJθ

Alternative mappings of participants to argument positions of this type is very common. As was demonstrated in Kibort (2008), it also occurs in dative shift, and in applicative constructions.

(c) Monoclausal 'syntactic' (periphrastic/analytical) causativisation

In syntactic causatives, the causative predicate is expressed by two separate verbs: the base verb and a verb meaning 'cause' morphologically independent of the base verb. However, monoclausal causatives can be demonstrated to have a single PRED, i.e. a functional structure with one SUBJ (see e.g. Matsumoto 1998, Butt 2005, Kroeger 2004: 222-226, and references therein). The patterns of assignment of grammatical functions to the single set of arguments in these causatives fit the same templates as monoclausal morphological causatives illustrated above, and can be captured in the same way.

Mapping Theory tools for argument-to-function mappings

For all argument-to-function mappings in all construction variants listed above, I assume the current version of the Mapping Theory developed by Kibort, as summarised in Kibort and Maling (2015: 150-153). I will demonstrate that it correctly captures the passivisation patterns of all variants.

Increasing the semantic valency in monoclausal causatives

Mainstream LFG analyses of causatives assume that causative realisation (whether with a lexical or light verb, or an affix) involves a 'cause' predicate which has its own argument structure (e.g. Alsina 1992, Matsumoto 1998, Kroeger 2004: 215-216), for example:

- (3)
- $$\text{CAUSE} \langle \text{ag} \quad \text{pt} \quad \overbrace{\text{PRED} \langle \text{ag} \quad \text{pt} \rangle}^{\text{caused event}} \rangle$$

Causativisation then involves Predicate Composition (the 'cause' predicate and the 'effect/base' predicate are combined) and Argument Fusion (a new argument is created which is both an argument of the cause predicate and the embedded predicate). However:

-- Many argument alternations add an argument, and it does not make sense to posit that each of them requires adding a predicate and fusing it with the base predicate to increase their valency (e.g. all predicates with unspecified objects e.g. *clean, eat, hunt*; with understood body parts e.g. *blink, wave, wash*; with understood reflexive and reciprocal objects e.g. *dress, exercise, agree, meet, touch*; with PROarb objects e.g. *shock, warn*; all predicates with implied beneficiaries/recipients in contexts which can be construed as semantically ditransitive; if inchoatives are considered basic, predicate composition would need to extend to them, too).

-- In principle, there is no problem with adding an argument to the valency frame of a predicate (as demonstrated e.g. by Needham and Toivonen 2011). The problem with adding a new causer is that it disrupts the presumably universal fixed order of semantic roles which is assumed in mainstream LFG, even though hierarchies of semantic roles have long been demonstrated to be inadequate (e.g. Levin and Rappaport Hovav 2005 and references therein).

-- As mentioned above, adding a causer results in a similar range of changes to participant linking as dative shift and other alternations that allow more than one participant to compete for the direct object function. It makes sense to propose the same mechanism to account for the whole range.

-- PRED is a distinct lexical entry with its own argument structure which is part of syntax. Its arguments can be structure-shared with another PRED. What is attempted in Predicate Composition and Argument Fusion is a process that belongs in the semantics (event composition) which is a different level of analysis and should not be forced to occur in the syntax.

-- In a recent paper, Lowe (2015) offers a very thorough critique of the traditional LFG account of complex predicates, and in particular of the concept of argument fusion, from a formal perspective. I will not repeat his arguments here, but the reader is referred to this publication for details. Lowe also offers a proposal of how to achieve complex predicate formation in LFG combined (crucially) with glue semantics. Lowe's solution is formal and implementable in XLE. Note, however, that even the most current version of glue semantics which he uses still identifies the semantic arguments of the predicate by their thematic roles and seems to rely on their meaning remaining the same in argument alternations.

Mapping Theory tools for participant-to-argument mappings

The present proposal recognises that in some (morphosemantic) argument alternations, the predicate entails different roles for the same participants in the two variants, e.g. *load the wagon* (patient) *with hay* (instrument, or theme?) ~ *load hay* (patient) *onto the wagon* (location).

The Mapping Theory solution offered in Kibort (2007, and further work) is that the participants are allowed to map on the available argument positions in alternative ways for semantically altered predicates. The participants remain the same but their meaning/interpretations may change between the variants. An illustration of how this solution might be implemented with the use of so-called 'semantic markers' is given in Kibort (2014); in gist, the semantic participants of an event are identified not through their semantic roles, but via 'markers' which indicate merely what mapping options each participant has of mapping to the hierarchically ordered syntactic argument positions within the set of semantically related predicates each lexicalising a different semantic construal of the event. Note that this is essentially a 'distributive' and 'implicational' approach to meaning, where 'meaning is contrast' and the content of meaning does not need to be captured in order to model the system of meaning-form relations. Interestingly, this approach is now gaining ground in morphology, with the support of neuroscience and information theory.

Examples of markers which are part of the current Mapping Theory model:

- (4) **1** is a semantic participant which can map on the (arg1) position
- 2** is a semantic participant which can map on the (arg2) position
- 3** is a semantic participant which can map on the (arg3) position
- 4** is a semantic participant which can map on the (arg4-arg_n) position
- 41** is a semantic participant which can map either on the (arg4-arg_n) or the (arg1) position
- 42** is a semantic participant which can map either on the (arg4-arg_n) or the (arg2) position
- 23** is a semantic participant which can map either on the (arg2) or the (arg3) position
- and so on

(5) Sample RULES FOR MAPPING PARTICIPANTS TO THE ARGUMENT POSITIONS (specific, formal):

- (a) Arg1 position is associated with the participant bearing the semantic marker **1**.
If participant **1** is not expressed, participant **13** or **41** maps on the first argument position.
- (b) Arg2 position is associated with the participant bearing the semantic marker **2**.
- (c) Arg3 position is associated with the participant bearing the semantic marker **3**.
- (d) Arg4 position is associated with the participant bearing the semantic marker **4**. [This means either **4** or **41**.]

The present paper offers an extension of Kibort's (2014) method to causativisation. It recognises that the causative adds a new semantic participant to an event and includes it within the meaning of the verb. The meaning of the derived predicate – via its sets of entailments – is such that it requires that the added participant must be mapped on the most prominent argument. The causative rule can, therefore, be seen as operating in the following way:

- Take a semantic valency frame, e.g. OPEN < 1 2 > (simplified).
- Add a new semantic participant '1' **and** a semantic marker to the participant which needs to map differently to the non-causative variant, e.g. in Turkish: CAUSE-OPEN < 1 13 2 > .
- The Mapping Rules will find and map: participant '1' onto arg1, participant '2' onto arg2, and participant '13' onto arg3 position.
- Note that the Mapping Rules cannot map participant '13' onto arg1 because participant '1' would remain unmapped and the mapping would fail.

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