

The Argument Structure of Siraiki Causatives

John J. Lowe
University of Oxford

Ali H. Birahimani
Shanghai Jiao Tong University

Proceedings of the LFG'19 Conference

Australian National University

Miriam Butt, Tracy Holloway King, Ida Toivonen (Editors)

2019

CSLI Publications

pages 191–211

<http://csli-publications.stanford.edu/LFG/2019>

Keywords: Siraiki, Mapping Theory, causative

Lowe, John J., & Birahimani, Ali H. 2019. The Argument Structure of Siraiki Causatives. In Butt, Miriam, King, Tracy Holloway, & Toivonen, Ida (Eds.), *Proceedings of the LFG'19 Conference, Australian National University*, 191–211. Stanford, CA: CSLI Publications.



Abstract

We present data from Siraiki, an understudied modern Indo-Aryan language. Siraiki has two productive morphological causatives, as well as other causative formations. We present the Siraiki data, and develop an analysis within LFG's Mapping Theory. We aim to show that the differences between causativization of intransitive and of transitive verbs can be accounted for without having to assume two homophonous variants of each causative morpheme.

1 Introduction

Siraiki is an understudied modern Indo-Aryan (IA) language spoken in central Pakistan. It has a variety of causative constructions, including both morphological and periphrastic constructions. The details of the Siraiki causative system were previously undescribed, but see now Lowe and Birahimani (2019). In this paper, we focus on the formal analysis of the two most productive causatives, the morphological formations in $-\bar{a}v$ (the 'primary' causative) and $-v\bar{a}v$ (the 'double' causative).

Siraiki is spoken on the western boundary of the IA linguistic area, in the south and west of Pakistan's Punjab province and the southeast of the Khyber Pakhtunkhwa province. It is also the language of a large historically immigrant population in Sindh and of some settlers in the Kacchi region of the Balochistan province. The total number of Siraiki speakers today is likely to be in the range 20–40 million. Siraiki forms a part of a larger dialect continuum with Panjabi toward the east, Sindhi to the south, and Potohari and Hindko in the north. There are significant differences between Siraiki and Panjabi, in phonology and verb system. The Siraiki verb system and phonology are more similar to Sindhi, but in most respects Siraiki and Sindhi are quite different. Beside the reference grammar of Shackle (1976), and brief descriptions in works like Garry and Rubino (2001), there are no detailed recent linguistic accounts or analyses of any linguistic phenomena in Siraiki, before Lowe and Birahimani (2019) and the survey in Bashir and Connors (2019).¹

The basic grammar of Siraiki is similar to other New IA languages like Panjabi and Hindi-Urdu. It displays two morphological cases, direct vs. oblique, with clitic postpositions for oblique 'cases', and split ergative morphosyntactic alignment. The Siraiki verb system is based on two primary participles, imperfective and perfective. The imperfective participle morpheme (usually) has the form $-(n)d$

[†]We are very grateful to the audiences at LFG19, 8 July 2019, at SE-LFG26, 27 October 2018, and also at Oxford's Syntax Working Group, May 2018 and February 2019, where we made early presentations of this data and analysis. In particular, we thank Rachel Nordlinger and Miriam Butt for helpful discussions. We are also very grateful to Imre Bangha, Ghanshyam Sharma and Peter Hook. All errors are of course our own.

¹Bashir and Connors's survey is based on a different dialect of Siraiki from that which forms the basis of the present paper and Lowe and Birahimani (2019), and the language data presented there differs in certain respects from our own.

with intransitive verbs, but *-ēnd* with transitive verbs; the imperfective participle with causatives is *-ēnd*, which represents the contraction of transitive *-ēnd* with the vowel of the causative suffix. In this paper we use only imperfective examples, but our analysis applies equally well to perfective sentences, with the addition of relevant mechanisms to deal with the ergative case marking.

2 Transitive and causative alternations in Siraiki

Dixon (2000) distinguishes four means of expressing causativization: lexical, morphological, analytic, and periphrastic.

Lexical causatives involve a transitivity alternation between two lexically distinct verbs or verb stems. Such alternations are central to the Siraiki verb system, but are distinct from causativization, as shown below. Siraiki has three morphological causatives, formed with the suffixes *-āv*, *-vāv*, and *-āl*; the first two of these are the most productive causative markers in Siraiki, and are the focus of this paper. Siraiki also forms periphrastic causative constructions with *lāvaṇ* and *k^haṛāvaṇ*, for which see Lowe and Birahimani (2019, 286–288).

2.1 Transitivity alternations

A central feature of the Siraiki verb system is the paradigmatic pairing of intransitive and transitive stems. Most verbs display two morphologically distinct but related stems. The largest group of verb pairs involves a vowel alternation whereby the vowel of the transitive stem is underlyingly long and the vowel of the intransitive stem is necessarily short (1a–b). Other morphologically related stems may differ in the final consonant (1c–d), or show both vowel alternation and change in the final consonant (1e–f). Some verb pairs are suppletive (1g–h); a few infrequent verbs, both transitive and intransitive, have no corresponding pair, e.g. transitive *ap^aṛ-* ‘catch/seize’, *čut-* ‘target’, *ḍ^hak-* ‘cover/imprison’, intransitive *baṇ-* ‘be built’, *b^hir-* ‘fight’.

- (1) a. *ḥal-* ‘kindle (intr.)’ vs. *ḥāl-* ‘kindle (tr.)’
- b. *luṛ^h-* ‘drift’ vs. *lōṛ^h-* ‘set adrift’
- c. *faṽ-* ‘be born’ vs. *faṇ-* ‘give birth’
- d. *ḍ^hōp-* ‘be washed’ vs. *ḍ^hōv-* ‘wash’
- e. *vik-* ‘be sold’ vs. *vēč-* ‘sell’
- f. *ḍ^huk-* ‘be carried’ vs. *ḍ^hōh-* ‘carry’
- g. *ḍ^hah-* ‘fall down’ vs. *saṭ-* ‘throw down’
- h. *lab^h-* ‘be found’ vs. *gōl-* ‘find’

The following examples (2)–(3) and (4)–(5) serve to illustrate intransitive/transitive verb pairs.²

²We use standard Leipzig glosses, with the addition of DIR for ‘direct case’, and CS1 and CS2 for the primary and double causative markers, respectively.

2.2 Causative data

As mentioned above, Siraiki has three morphological causatives, in $-\bar{a}v$, $-v\bar{a}v$, and $-\bar{a}l$. Some verbs show all three, e.g. sik^h - ‘learn’: $sik^h\bar{a}v$ - ‘make x learn’, $sik^{ha}v\bar{a}v$ - ‘cause x to make y learn’, $sik^h\bar{a}l$ - ‘teach’. $-\bar{a}l$ is restricted in distribution and will not be considered in this paper, though its analysis would parallel that of $-\bar{a}v$ and $-v\bar{a}v$.

The morphemes $-\bar{a}v$ and $-v\bar{a}v$ correspond directly with Hindi-Urdu $-\bar{a}$ and $-v\bar{a}$, and have cognates in many other IA languages. The ‘primary’ causative suffix $-\bar{a}v$ derives historically from the (first part of the) Middle Indic causative marker $-\bar{a}paya/-\bar{a}pel/-\bar{a}ve$.⁴ The ‘double’ causative marker $-v\bar{a}v$ derives from an early double marking $-\bar{a}p\bar{a}paya/-\bar{a}p\bar{a}pel/-\bar{a}v\bar{a}ve$ (found already in the Aśokan inscriptions; Edgerton, 1946, 100), which originally had a double causative value.

2.2.1 The primary causative in $-\bar{a}v$

The primary causative in $-\bar{a}v$ is older than $-v\bar{a}v$ and up to a certain point in the history of Modern IA was the basic causative suffix with all verbs. In modern Siraiki, it is largely, but not exclusively, restricted to intransitive stems, transitive stems now mostly taking the more productive $-v\bar{a}v$. The following examples show causativisation of intransitive only $b^h i\bar{r}$ - ‘fight’ with the primary causative $-\bar{a}v$ in $b^h i\bar{r}\bar{a}v$ - ‘make x fight’:

- (8) *murs b^hiṛ^a-d-ē in*
 man.DIR fight.INTR-IPFV-M.PL be.PRS.3PL
 ‘Men fight.’

- (9) *gāmaṇ mursē=kū b^hiṛ-ēnd-ā ē*
 G.DIR man.OBL.M.PL=DAT fight.INTR-CS1.IPFV-M.SG be.PRS.3SG
 ‘Gaman makes men fight.’

The subject of the intransitive verb becomes the object of the causative verb (here differentially marked with $=kū \approx$ Hindi-Urdu $-ko$).

Some common transitive stems still form their basic causative with $-\bar{a}v$, e.g. $dīk^h\bar{a}v$ - ‘make x see’ from $dēk^h$ - ‘see’, $kar\bar{a}v$ - ‘make x do y ’ from kar - ‘do y ’. Any analysis of $-\bar{a}v$ must therefore capture the fact that it can attach to both intransitive and transitive stems.

- (10) *gāmaṇ=dā putr kam kar-ēnd-ā*
 Gaman.OBL=GEN.M.SG.DIR son.DIR work do.TR-IPFV-M.SG
 ē
 be.PRS.3SG
 ‘Gaman’s son does the work.’

⁴The $-aya$ element, which was the original causative suffix in Old IA, survives in Siraiki in the $-e$ - of the transitive imperfective marker $-\bar{e}nd$ (and by extension in the causative imperfective marker $-\bar{e}nd$).

- (11) *gāmaṇ āp^aṇē putr=kũ kam kar-āend-ā*
 Gaman.DIR own.OBL.M.SG son.OBL=DAT work do.TR-CS1.IPFV-M.SG
ē
 be.PRS.3SG
 ‘Gaman makes his son do the work.’

The subject of the transitive verb becomes an oblique argument in the causative, marked with the dative case clitic =*kũ*.⁵ The object of the transitive verb remains the object in the causative.

With verbs which have transitive/intransitive stem pairs, the *-āv* causative to the intransitive stem is semantically very close to the transitive stem, but as shown above (6–7) they are distinct.

2.2.2 The ‘double’ causative *-vāv*

The double causative *-vāv* is the most productive causative suffix in Siraiki. It usually attaches to transitive stems; despite its name (and historical origin), it forms simple (not double) causatives to transitive stems. As when *-āv* attaches to transitive stems, the subject of the transitive becomes an oblique in the causative, while the object of the transitive remains an object. In contrast with *-āv*, the case marking of the oblique causee-agent with *-vāv* causatives is ablative =*dē kanũ*.⁶

- (12) *kap^aṛē d^hop^a-d-ē in*
 cloth.DIR.M.PL be_washed.INTR-IPFV-M.PL be.PRS.3PL
 ‘The clothes are washed.’
- (13) *gāmaṇ=dī zāl kap^aṛē d^hu-ēnd-ī*
 gaman.OBL=GEN.DIR.F.SG wife.DIR cloth.DIR.M.PL wash.TR-IPFV-F.SG
ē
 be.PRS.3SG
 ‘Gaman’s wife washes the clothes.’
- (14) *gāmaṇ zāl=dē kanũ kap^aṛē*
 gaman.DIR wife.OBL=GEN.OBL.M.SG from cloth.DIR.M.PL
d^hu-vāend-ā ē
 wash.TR-CS2.IPFV-M.SG be.PRS.3SG
 ‘Gaman makes his wife wash the clothes.’

The stem *d^hu-* in (14) is unambiguously the transitive alternant *d^hōv-* ‘wash’ (with vowel reduction and loss of *v* after *u*), not the intransitive alternant *d^hōp-*, so this cannot be a double causative to the intransitive stem. Like Hindi-Urdu *-vā*,

⁵Siraiki =*kũ* therefore has two uses, one for differentially marked direct objects, the other for oblique arguments. The difference is clear under passivization, only the former being promotable to subject.

⁶This difference in case marking can be explained diachronically.

the analysis is ambiguous; for example, *luṛ^{ha}vāvaṇ* ‘cause *x* to set *y* adrift’ could theoretically be double causative from the intransitive verb *luṛ^haṇ* ‘to drift’, or simple causative from transitive verb *lōṛ^haṇ* ‘to set adrift’, or a causative from the primary causative *luṛ^hāvaṇ* ‘to make drift’. This ambiguity may have played a role in the reanalysis of *-vāv* from a double causative marker to a simple causative marker to transitive stems.

- (20) *kāṛ^hyā* *luṛ^{ha}-d-yā* *in*
 wood.DIR.F.PL drift.INTR-IPFV-F.PL be.PRS.3PL
 ‘The wood drifts.’
- (21) *gāmaṇ* *kāṛ^hyā* *luṛ^h-ēnd-ā* *ē*
 Gaman.DIR wood.DIR.F.PL set_adrift.TR-IPFV-M.SG be.PRS.3SG
 ‘Gaman sets the wood adrift.’
- (22) *sāval* *kāṛ^hyā* *luṛ^h-ēnd-ā* *ē*
 Sanwal.DIR wood.DIR.F.PL drift.INTR-CS1.IPFV-M.SG be.PRS.3SG
 ‘Sanwal makes the wood drift.’
- (23) *sāval* *gāmaṇ=dē* *kanū kāṛ^hyā*
 Sanwal.DIR Gaman.OBL=GEN.M.SG.OBL from wood.DIR.F.PL
luṛ^{ha}-vēnd-ā *ē*
 set_adrift.TR-CS2.IPFV-M.SG be.PRS.3SG
 ‘Sanwal makes Gaman set the wood adrift.’

Diachronically, at least, *-vāv* represents doubled *-āv*, so conceivably the double causative uses of *-vāv*, such as *kar^avāvaṇ* in (17), could be analysed as e.g. *kar-+-āv+-āv*. However, the more common simple causative use of *-vāv* requires us to treat *-vāv* synchronically as an independent suffix (not merely a contraction of *-āv+-āv*).

This simple causative *-vāv* attaches not only to transitive stems, as seen in (14) above, but also to some intransitive stems. For example, besides attaching to the transitive stem *d^hōv-* ‘wash’, it can also attach to the intransitive alternant *d^hōp-* ‘be washed’:

- (24) *kap^arē* *d^hop^a-d-ē* *in*
 cloth.DIR.M.PL be_washed.INTR-IPFV-M.PL be.PRS.3PL
 ‘The clothes are washed.’
- (25) *gāmaṇ* *kap^arē* *d^hup^a-vēnd-ā*
 gaman.DIR cloth.DIR.M.PL be_washed.INTR-CS2.IPFV-M.SG
ē
 be.PRS.3SG
 ‘Gaman has the clothes washed.’

Crucially, although the causation in (25) is interpreted as indirect (Gaman does not do the washing himself), it is ungrammatical to add a causee-agent as (26) shows:

- (26) **gāmaṇ zāl=dē kanū kap^a rē*
 gaman.DIR wife.OBL=GEN.OBL.M.SG from cloth.DIR.M.PL
d^hup^a-vānd-ā ē
 be_washed.INTR-CS2.IPFV-M.SG be.PRS.3SG
 ‘Gaman has his wife wash the clothes.’

Thus (25) cannot represent a double causative with unexpressed causee-agent, but must be a simple (indirect) causative to the intransitive stem.⁸

The pattern seen with *d^hōpaṇ/d^hōvaṇ* is seen also with other verbs, including *d^hukkaṇ/d^hōhaṇ* ‘to be carried’/‘to carry’:

- (27) *miṭṭī d^huk^a-d-ī ē*
 soil.DIR.F.SG be_carried.INTR-IPFV-F.SG be.PRS.3SG
 ‘The soil is carried.’

- (28) *gāmaṇ miṭṭī d^huh-ēnd-ā ē*
 gaman.DIR soil.DIR.F.SG carry.TR-IPFV-M.SG be.PRS.3SG
 ‘Gaman carries the soil.’

The ‘double’ causative *-vāv* attaches to *d^hōhaṇ* creating a simple causative (29) to the transitive.

- (29) *sāval gāmaṇ=dē kanū miṭṭī*
 sanwal.DIR gaman.OBL=GEN.M.SG.OBL from soil.DIR.F.SG
d^huh^a-vānd-ā ē
 carry.TR-CS2.IPFV-M.SG be.PRS.3SG
 ‘Sanwal makes Gaman carry the soil.’

The intransitive stem *d^huk-* can also form a causative with *-vāv* (30), with the semantic restrictions noted for (25), as seen in (31).

- (30) *sāval miṭṭī d^huk^a-vānd-ā ē*
 sanwal.DIR soil.DIR.F.SG be_carried.INTR-CS2.IPFV-M.SG be.PRS.3SG
 ‘Sanwal has the soil carried.’

- (31) **sāval gāmaṇ=dē kanū miṭṭī*
 sanwal.DIR gaman.OBL=GEN.M.SG.OBL from soil.DIR.F.SG
d^huk^a-vānd-ā ē
 be_carried.INTR-CS2.IPFV-M.SG be.PRS.3SG
 ‘Sanwal has the soil carried by Gaman.’

⁸Note that a primary causative to this stem, expected **d^hupāvaṇ*, does not exist.

2.3 Summary

We have shown that Siraiki has two productive morphological causatives, $-\bar{a}v$ and $-v\bar{a}v$. Although there is a tendency for the former to be found with intransitive stems and the latter with transitive stems, it is crucial for the analysis in the next section that both can and do attach to both intransitive and transitive stems, forming simple causatives in both cases. There are three main differences between $-\bar{a}v$ and $-v\bar{a}v$: the oblique causee-agent receives different case marking with the two suffixes; the latter can have a double causative sense with some stems (where it is in contrastive distribution with $-\bar{a}v$); and the latter is also an indirect or non-contactive causative. We address the first two of these issues below; the third we treat as a semantic entailment, the analysis of which goes beyond the argument structure model set up below.

3 Predicate composition in LFG

The argument structure of causatives and similar constructions has a long tradition of analysis within LFG, based on the concept of predicate composition. Important early work was undertaken by Alsina and Joshi (1991) and Alsina (1992, 1996); this was built on and developed most extensively by Butt (e.g. 1995, 1997, 1998, 2014). Much of this work focuses on complex predicates, which require predicate composition in the syntax, but the principles developed are equally well applied to predicate composition in the morphology, as with morphological causatives.

In this paper, we follow Dalrymple et al. (2019) in integrating Butt's approach to complex predication with the model of argument structure developed by Kibort (2001, 2004, 2006, 2007). Kibort's argument structure model has been subject to precise formalization and integration with glue semantics by Findlay (2016), and this has been extended to a glue treatment of complex predication by Lowe (2015, 2019). In this section we present 'traditional' argument structures modelled as complex semantic forms; in section 4 below we reformulate our analysis within the glue-based model of Lowe (2015, 2019).

For reference, Kibort (2007) proposes a universal "valency template" for all non-derived predicates:

$$(32) \quad \left\langle \begin{array}{cccccc} \text{arg}_1 & \text{arg}_2 & \text{arg}_3 & \text{arg}_4 & \dots & \text{arg}_n \\ [-O/-R] & [-R] & [+O] & [-O] & & [-O] \end{array} \right\rangle$$

Verbs select one or more arg slots together with default feature specification. Arg slots link to grammatical functions according to the hierarchy of grammatical functions: arg_1 (if selected) links to the highest available grammatical function, then arg_2 (if selected) links to the highest remaining grammatical function, and so on. We adopt the hierarchy of grammatical functions proposed by Her (2013), building on Bresnan and Moshi (1990):

$$(33) \quad \text{SUBJ} > \text{OBJ} > \text{OBL}_\theta > \text{OBJ}_\theta$$

The grammatical functions decompose according to two binary features, $\pm R$ (e-stricted) and $\pm O$ (bjective) as proposed by Bresnan and Kanerva (1989). The grammatical function hierarchy can then be understood in terms of markedness: positive values for O and R are marked; markedness is inversely correlated with position on the GF hierarchy.⁹

(34)		-R	+R
	-O	SUBJ	OBL _{θ}
	+O	OBJ	OBJ _{θ}

3.1 Argument fusion vs. argument raising

Treatments of predicate composition in LFG fundamentally rely on two distinct processes of composition, which Butt (2014) labels ‘argument fusion’ and ‘argument raising’. Alsina and Joshi (1991) and Alsina (1992) first proposed the notion of argument fusion, whereby a causative predicate contains an argument position which is coindexed with an argument position of the embedded predicate. Alongside this, Alsina (1996) also admitted causative predicates which do not show coindexation of arguments, i.e. *argument raising*.

The basic facts of causativisation in Siraiki are naturally similar to the related causatives in other IA languages like Hindi-Urdu, and also to complex predicates in these languages. An analysis of the Hindi-Urdu causative is given by Butt (1997), but most of Butt’s work is devoted to Hindi-Urdu complex predicates. For somewhat different reasons from Alsina, Butt (2014) argues that complex predicates in Hindi-Urdu involve both argument fusion and argument raising. Although this is not explicitly extended to causatives by Butt, we assume that in principle the same arguments should hold also for IA causatives. We therefore take the proposals of Butt (2014) to represent the most advanced and up-to-date treatment of predicate composition, applicable also to morphological causatives as found in Siraiki. We briefly discuss the earlier proposals of Butt (1997), which she explicitly applies to the Hindi-Urdu causative, below.

As noted, Butt (2014) argues for two types of causative complex predicate, ‘argument fusion’ and ‘argument raising’. These may be illustrated using her examples of the Urdu permissive, which has two senses: ‘allow-to-do’ (35) vs. ‘allow-to-happen’ (36).

- (35) *Anjum-ne Saddam-ko ciṭṭhii likh-ne d-ii*
 Anjum-ERG Saddam-DAT note.NOM.F.SG write-INF.OBL let-PFV.F.SG
 ‘Anjum let Saddam write a note.’

⁹Her (2013) argues that [+R] is more marked than [+O], hence OBJ is higher on the GF hierarchy than OBL _{θ} .

- (36) *kacce lamhe-ko faak=par pak-ne*
 unripe.M.OBL moment.M.SG.OBL-ACC branch.M.SG=on ripen-INF.OBL
d-o
 give-IMP
 ‘Let the tender moment ripen on the bough.’

Butt (2014) argues that the ‘allow-to-do’ permissive involves ‘argument fusion’: the highest argument of the lexical predicate is coindexed with the lowest non-variable argument of the light verb. For example, the transitive verb *likh-* ‘write’ has two arguments:

- (37) *Saddaf-ne ciṭṭhii likh-ii*
 Saddaf-ERG note.NOM.F.SG write.PFV.F.SG
 ‘Saddaf wrote a note.’

Stated in terms of Kibort’s (2007) valency template, the argument structure for *likh-*, and its basic mapping to grammatical functions, can be represented as follows:

- (38)
- | | | | |
|---------------------|-------|------------------|--------------------|
| | AGENT | THEME | |
| | | | |
| <i>likh</i> ‘write’ | { | arg ₁ | arg ₂ } |
| | | [−O] | [−R] |
| | SUBJ | OBJ | |

The light verb *de-* has a three place argument structure, including a variable %PRED, which is filled by the embedded predicate:

- (39) ‘allow-to-do’ *de*: ‘let⟨arg₁, arg₃, %PRED⟩’

In analysing *likhne de-* in (35), the argument frame for *likh-* is embedded in the argument frame for *de-*, and argument fusion coindexes the arg₃ of *de* with the arg₁ of *likh-*:

- (40)
- | | | | | | | | | |
|-----------------|---|------------------|------------------|---------|---|------------------|--------------------|---|
| <i>de</i> ‘let’ | { | arg ₁ | arg ₃ | ‘write’ | { | arg ₁ | arg ₂ } | } |
| | | [−O] | [+O] | | | ([−O]) | [−R] | |
| | | SUBJ | OBJ _θ | | | OBJ | | |

The coindexed argument adopts its feature specification from the arg₃ of the light verb, and hence links to OBJ_θ.

Butt (2014) argues that the ‘allow-to-happen’ permissive in (36) involves argument raising rather than argument fusion. The verb *pak-* ‘ripen’ is intransitive and has only one argument position. In this case, the light verb *de-* ‘let’ is assumed to have a different subcategorisation frame, with one argument position plus the variable slot %PRED:

problem is particularly acute, since as we have shown above, both $-\bar{a}v$ and $-v\bar{a}v$ can be used with both transitive and intransitive verbs, with the same argument structure patterns in both cases; therefore we would have to assume that both show exactly the same ambiguity. In fact, the third Siraiki causative morpheme $-\bar{a}l$ can also causativize both intransitive and transitive verbs, so we would end up having to assume the same ambiguity for three causative morphemes. It seems like this would be missing a generalization.

3.2 Our proposal

We propose that in Siraiki, and also in Hindi-Urdu (and probably many other IA languages), we in fact only need one argument frame for causativization (and similar processes, like the permissive), which derives the required differences between transitive and intransitive attachment entirely through the properties of the embedded predicate. This frame involves argument fusion, but crucially the second argument position is *unspecified for* $[\pm O/R]$ features. Argument raising is thus not required.

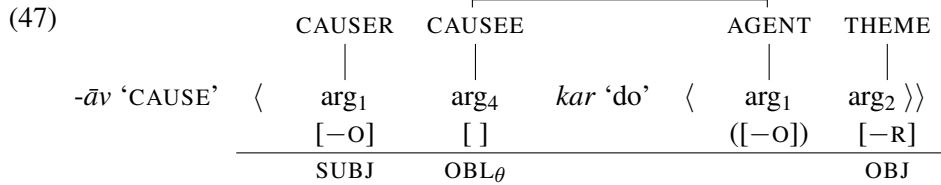
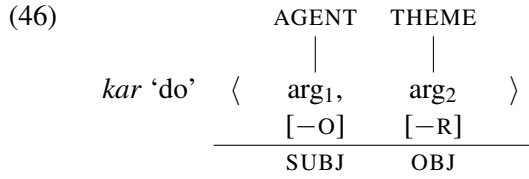
$$(43) \quad \begin{array}{c} \text{CAUSER} \quad \text{CAUSEE} \\ | \quad | \\ \text{arg}_1, \quad \text{arg}_4, \quad \% \text{PRED} \\ [-O] \quad [] \end{array} \langle \quad \rangle$$

This single argument frame can be applied to both intransitive and transitive predicates, deriving the correct argument structure for the respective causatives. Example (44) shows the monovalent argument structure of the intransitive verb $b^h i\bar{r}$ - ‘fight’, from example (8); ex. (45) shows the complex argument structure of the causative $b^h i\bar{r}-\bar{a}v$ - ‘make x fight’ from example (9).

$$(44) \quad b^h i\bar{r} \text{ ‘fight’} \langle \text{arg}_1 \rangle \\ [-O]$$

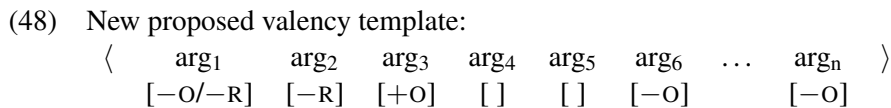
$$(45) \quad \begin{array}{c} \text{CAUSER} \quad \text{CAUSEE} \quad \text{AGENT} \\ | \quad | \quad | \\ \text{arg}_1 \quad \text{arg}_4 \quad b^h i\bar{r} \text{ ‘fight’} \langle \text{arg}_1 \rangle \\ [-O] \quad [] \quad ([-O]) \\ \hline \text{SUBJ} \quad \text{OBJ} \end{array} \langle \quad \rangle$$

Note that it is always the properties of the outer/higher fused argument which are relevant for linking. The linking to SUBJ and OBJ proceeds without problem. The same causative predicate applied to a transitive verb is slightly more complicated; the following argument structures represent transitive kar - ‘do’ and causative $kar-\bar{a}v$ - ‘make x do’ from (10) and (11) respectively.



Kibort (2007, 265) proposes a unified Mapping Principle, whereby “the ordered arguments [of a predicate, ordered according to the valency template] are mapped onto the highest (i.e. *least* marked) compatible function on the markedness hierarchy.” This considers only simple argument structure, and leaves a degree of ambiguity regarding complex structures like that in (47). In simple cases, the linear (left-to-right) ordering of arguments always matches the numerical ordering of the arg indices, based on the valency template given in (32). In (47), however, the arg₄ of the causative predicate linearly precedes the arg₂ of the embedded predicate. We propose that in such cases, at least in Siraiki, ordering of arguments for linking purposes is based on arg index, not linear order.¹¹ In the case of (47), then, after the arg₁ of the causative predicate links to SUBJ, the arg₂ of the embedded predicate links to the highest remaining compatible grammatical function, OBJ, and finally the arg₄ of the causative predicate links to the highest remaining compatible function, OBL_θ. If linking were to proceed according to linear order, the arg₂ of the causative predicate would link to OBJ, and the arg₄ of the embedded predicate would then be unable to link, as there would be no [-R] functions remaining.

The unspecified arg₄ argument position does not appear in Kibort’s (2007) valency template; we must therefore assume an augmented version of this template. Below, we will argue for a second unspecified position for the *-āv* causative; we therefore assume the following revised version of Kibort’s valency template:



The conceptual argument for the argument fusion/raising distinction in Butt’s model, mentioned above, involves the status of the causee (or permittee): there is a difference between permitting/causing someone to do something, and permitting/causing something to happen (‘allow-to-do’ vs. ‘allow-to-happen’). Argument fusion in the former case captures the fact that the act of permitting/causing someone to do something distinctly involves an affected permittee/causee, whereas permitting/causing something to happen less distinctly involves a permittee/causee as

¹¹But see Lowe et al. (2019) for Sanskrit data where ordering based on linearity is required.

such. That is, for Butt (2014), Saddaf in (35) is directly involved in the act of permission in a way that the tender moment in (36) is not. This is best understood as a claim about the semantic entailments holding on the permittee/causee role: a permittee or causee must be directly affected by the act of permission/causation, and also sufficiently agentive to bring about the embedded event. Our proposal, which involves argument fusion for all causatives, cannot claim to capture such differences in the argument structure. Our claims about the semantic entailments on the causee are less strict, and as such it is unproblematic to assume that the subjects of both transitive and intransitive verbs can be causees. This is certainly what is implied, in any case, by the analyses of causatives by Alsina (1996) and Butt (1997), so we assume that a relatively noncommittal approach to the semantic entailments on causees is not unjustified.¹²

3.3 *-vāv* and the double causative

Exactly the same type of argument frame will work for the simple causative uses of *-vāv* (and *-āl*), again whether attached to transitive or intransitive stems; the different case marking of the oblique argument can be specified separately (see below), and the non-contactive nature of the causation implied by *-vāv* is a semantic entailment which could for example be represented at semantic structure.

However, the double causative use of *-vāv* requires additional analysis. As seen in (17), when *-vāv* has a double causative value and both intermediate arguments are expressed, the ‘causee-causer’ (the causee of the ‘outer’ causation event and the causer of the ‘inner’ causation event) has the ablative case marking associated with the oblique argument of *-vāv*, while the ‘causee-agent’ (the causee of the ‘inner’ causation event and the agent of the lexical predicate) has the dative case marking associated with the oblique argument of *-āv*. Thus *-vāv* in double causative value functions as if it were synchronically *-āv+-vāv*.

In fact, this is not unexpected: Kulikov (1993, 126) notes a typological pattern of ‘double affix reduction’ whereby double causative marking can be reduced to marking by a single causative morpheme without changing the double causative sense. We therefore propose that the double causative use of *-vāv* represents the surface realization of what is functionally a double suffixation *-āv-vāv*.¹³

In this case, then, *-āv* and *-vāv* co-occur in the same verb form, underlyingly. In order that there be no clash between the two suffixes, particularly in terms of their respective case marking specifications (and with a view to the glue analysis below), we now require two distinct unspecified arg slots: unspecified arg₄ for *-āv* and unspecified arg₅ for *-vāv*.

¹²We have considered in depth whether there could be any evidence whatsoever in Siraiki regarding the semantic entailments on causees: if there were some way to distinguish the entailments placed on the embedded arg₁ of transitive verbs from those placed on the embedded arg₁ of intransitive verbs, this could provide evidence for the fusion/raising distinction. We have been unable to identify any means of distinguishing these arguments, however, which correlates with, but cannot be taken to positively support, our approach.

¹³We left this question open in Lowe and Birahimani (2019).

- (49) *sāval* *gāmaṇ=dē* *kanū*
 Sanwal.DIR Gaman.OBL=GEN.M.SG.OBL from
ū=dē *putr=kū* *kam kar^a-vāend-ā*
 DEM.OBL=GEN.M.SG.OBL son.OBL=DAT work do.TR-CS2.IPFV-M.SG
ē
 be.PRS.3SG
 ‘Sanwal makes Gaman make his (Gaman’s) son do the work.’

- (50)
- | | | | | | | | | |
|------|--------------------|------------------|--------------------|--------------------|--------|--------------------|----------------------|-------|
| | CAUSER | CAUSEE | | CAUSER | CAUSEE | | AGENT | THEME |
| -vāv | | | ⟨⟨ -āv | | | kar ‘do’ | | |
| | ⟨ arg ₁ | arg ₅ | ⟨ arg ₁ | arg ₄ ⟩ | | ⟨ arg ₁ | arg ₂ ⟩⟩⟩ | |
| | [-O] | [] | ([-O]) | [] | | ([-O]) | [-R] | |
| | SUBJ | OBL _θ | | OBL _θ | | | OBJ | |

3.4 A problem in Hindi-Urdu

Above we presented the proposals of Butt (2014) in terms of a distinction between transitive and intransitive verbs: Butt (like previous proposals) requires two distinct argument frames for the same causative (or permissive) predicate in order to account for the different treatment of the embedded first argument of intransitive and transitive verbs respectively. The reality is slightly more complex: Butt (2014, 186–187) gives an example (based on Davison, 2014, 141) of a permissive of an intransitive verb where the permittee becomes OBJ_θ rather than OBJ. In Butt’s analysis, OBJ_θ is the grammatical function of the embedded first argument of a transitive verb (equivalent to our OBL_θ for Siraiki causatives), but in this case is found with the first argument of an intransitive verb.

- (51) *mā-ne* *bacce-ko* *jā-ne* *dī-yā*
 mother-ERG child.OBL-DAT go-INF give.PFV.M.SG
 ‘The mother let the child go.’

Here, according to Davison and Butt, the dative marking on ‘child’ marks the indirect object, not a differentially marked direct object.¹⁴ That is, the permissive

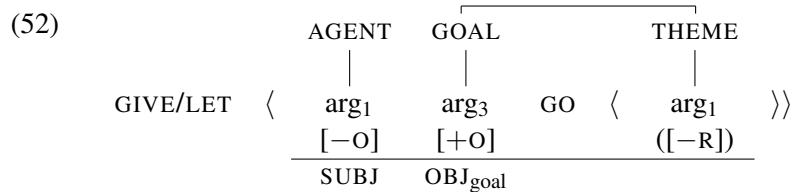
¹⁴For the sake of argument, we accept this analysis here. However, there are complications with Davison’s claim that *bacce-ko* here must be an indirect object. It is possible to have an inanimate direct object with the permissive of *jānā*, as shown in the following example, suggesting that *bacce-ko* may show DOM.

- (1) *caokīdār-ne* *gārī jā-ne* *dī*
 guard-ERG car go-INF give.PFV.F.SG
 ‘The guard let the car go.’

Moreover, Davison’s argument rests on the fact that dative marking on ‘child’ is obligatory in the passive of (51), whereas in the passives of transitive verbs generally the nominative/direct case is also possible for original DOM objects which are promoted to subject. However, we believe that this obligatory dative marking may reflect the semantic similarity of the passive permissive to certain impersonal modal constructions, such as the nominative infinitive + *cāhiye* expressing the sense

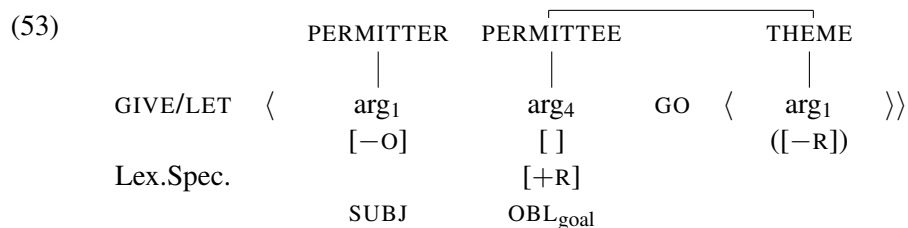
of some intransitive verbs in Hindi-Urdu treats the first (single) argument of the embedded predicate in the same way as the first argument of an embedded transitive predicate.

This type does not occur in Siraiki causatives, where the treatment of intransitive verbs is consistently as presented above. In order to extend our proposals to Hindi-Urdu, however, we would need to be able to deal with this type. We must first note that it is not entirely clear how the correct analysis derives in Butt’s model. The following example gives the analysis of Butt (2014, 187, ex. 51), (trivially) reformulated in terms of Kibort’s valency template:



Butt (2014) assumes that the [+O] specification on the second argument of the permissive is sufficient to guarantee the restricted object function, but it is equally possible that [+O] could link to OBJ, and given Kibort’s (2007) Mapping Principle, OBJ would be the only possibility in this case, as it is the highest, least marked, available argument on the grammatical function hierarchy after arg₁ links to SUBJ. Butt (2014) does not explain how OBJ is avoided in her analysis.

In the terms of our analysis above, we can analyse this type by means of a specification on the lexical verb: this type is lexically restricted to a set of intransitive verbs. Such verbs may contain a specification determining how they combine with certain complex predicates. In our terms, such a specification in this case would state that if there is an arg₄ in the argument frame of (or including) the verb, that arg₄ gets the additional specification [+R]:¹⁵



4 The glue approach

Lowe (2015, 2019) discusses various problems with the standard LFG (and XLE) account of complex predicates assumed here, and proposes an alternative glue-based analysis within Asudeh and Giorgolo’s (2012) approach to argument alternations. As given, Lowe’s account would also require multiple argument frames for causative morphemes.

¹⁴‘should’, which obligatorily show dative marking on animate subjects.

¹⁵This is easily formalized in the glue model discussed below.

However, it is simple to reformulate the approach proposed here within Lowe’s approach, if we adopt the argument structure implementation of Findlay (2016). The causative morpheme introduces the following functional descriptions and meaning constructor (very similar to Lowe, 2015, 434); given the relevant principles of mapping (cf. Findlay, 2016, 322), this will combine unproblematically with the f-descriptions and meaning constructors introduced by intransitive and transitive verbs, permitting a single analysis of both.

$$\begin{aligned}
(54) \quad & -\bar{a}v \text{ ‘CAUS’} \\
& (\uparrow \{ \text{SUBJ|OBL}_\theta \})_\sigma = (\uparrow_\sigma \text{ ARG}_1) \\
& (\uparrow \{ \text{SUBJ|OBJ|OBL}_\theta | \text{OBJ}_\theta \})_\sigma = (\uparrow_\sigma \text{ ARG}_4) \\
& \lambda P. \lambda y. \lambda x. \lambda e. \text{caus}(x, y, P(y, e)) : \\
& [(\uparrow_\sigma \text{ ARG}_1) \multimap (\uparrow_\sigma \text{ EV}) \multimap \uparrow_\sigma] \multimap \\
& (\uparrow_\sigma \text{ ARG}_4) \multimap (\uparrow_\sigma \text{ ARG}_1) \multimap (\uparrow_\sigma \text{ EV}) \multimap \uparrow_\sigma
\end{aligned}$$

The equivalent will apply for $-\bar{a}v$, with arg_5 for arg_4 in all occurrences. Essentially, the only difference here from Lowe (2015, 434) is that the arg_4 is entirely unspecified as to its associated grammatical function, permitting it to link to OBJ or OBL $_\theta$ as required.

We have not formalized the case marking requirements of the causative predicates in our analysis above, but this can be done unproblematically within the glue model of Lowe (2015, 2019). We assume that the casemarking of the core arguments, subject and object, is subject to general specifications: direct case for subjects of intransitives, subjects of transitive in imperfective aspect, and (\approx)inanimate objects of transitive verbs; ergative case for subjects of transitives in the perfective; dative for differentially marked (\approx animate) objects of transitive verbs.

Given these general specifications, the causative morphemes introduce default specifications for the case of their ‘causee’ arguments:

$$\begin{aligned}
(55) \quad & \text{a. } -\bar{a}v: \{((\uparrow_\sigma \text{ ARG}_4)_{\sigma-1} \text{ CASE}) | ((\uparrow_\sigma \text{ ARG}_4)_{\sigma-1} \text{ CASE})\} = \text{DAT} \\
& \text{b. } -v\bar{a}v: \{((\uparrow_\sigma \text{ ARG}_5)_{\sigma-1} \text{ CASE}) | ((\uparrow_\sigma \text{ ARG}_5)_{\sigma-1} \text{ CASE})\} = \text{ABL}
\end{aligned}$$

Informally, these specifications state that either the causee argument has case specified by something else, or else its case is DAT/ABL.

5 Conclusion

Siraiki has a rich causative system, with two productive morphological causatives as well as another morphological causative and periphrastic causative expressions. All three morphological causatives, of which in this paper we have focused on the two most productive, can attach to both intransitive and transitive verbs. The existing LFG standard for dealing with complex predication of this sort would involve assuming two homophonous variants of each causative suffix, in order to deal with the differential treatment of intransitive and transitive verbs, but we have argued

that such an approach misses a generalization. We have shown that a slightly different approach is possible, building on existing work but assuming a single causative argument frame for causatives of both transitive and intransitive verbs.

Causatives and related formations are highly complex and varied, both in Siraiiki and crosslinguistically, and our account is necessarily restricted in some respects. Future work could profitably explore extending this approach to other phenomena, both in Siraiiki and other modern Indo-Aryan languages, and more widely. For an initial step in this direction, see Lowe et al. (2019).

References

- Alsina, Alex (1992). 'On the argument structure of causatives'. *Linguistic Inquiry* 23(4), pp. 517–555.
- Alsina, Alex (1996). *The Role of Argument Structure in Grammar*. Stanford, CA: CSLI Publications.
- Alsina, Alex and Smita Joshi (1991). 'Parameters in Causative Constructions'. In L. Dobrin, L. Nichols, and R. M. Rodriguez (eds.), *Proceedings from the 27th Regional Meeting of the Chicago Linguistic Society (CLS)*, Chicago, IL: Chicago Linguistic Society, pp. 1–16.
- Asudeh, Ash and Gianluca Giorgolo (2012). 'Flexible Composition for Optional and Derived Arguments'. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG12 Conference*, Stanford, CA: CSLI Publications, pp. 64–84.
- Bashir, Elena and Thomas J. Connors (2019). *Grammar of Hindko, Panjabi, and Saraiki*. Berlin: de Gruyter.
- Bresnan, Joan and Jonni M. Kanerva (1989). 'Locative Inversion in Chicheŵa: A Case Study of Factorization in Grammar'. *Linguistic Inquiry* 20, pp. 1–50.
- Bresnan, Joan and Lioba Moshi (1990). 'Object Asymmetries in Comparative Bantu Syntax'. *Linguistic Inquiry* 21(2), pp. 147–185.
- Butt, Miriam (1995). *The Structure of Complex Predicates in Urdu*. Stanford, CA: CSLI Publications.
- Butt, Miriam (1997). 'Complex Predicates in Urdu'. In Alex Alsina, Joan Bresnan, and Peter Sells (eds.), *Complex Predicates*, Stanford, CA: CSLI Publications.
- Butt, Miriam (1998). 'Constraining Argument Merger Through Aspect'. In Erhard Hinrichs, Andreas Kathol, and Tsuneko Nakazawa (eds.), *Complex Predicates in Nonderivational Syntax*, San Diego, CA: Academic Press, pp. 73–113.
- Butt, Miriam (2014). 'Control vs. Complex Predication: Identifying Non-Finite Complements'. *Natural Language & Linguistic Theory* 32(1), pp. 165–190.
- Dalrymple, Mary, John J. Lowe, and Louise Mycock (2019). *The Oxford reference guide to Lexical Functional Grammar*. Oxford: Oxford University Press.
- Davison, Alice (2014). 'Non-finite complements and modality in *de-na* 'allow' in Hindi-Urdu'. *Natural Language & Linguistic Theory* 32, pp. 137–164.

- Dixon, R. M. W. (2000). 'A typology of causatives: form, syntax and meaning'. In R. M. W. Dixon and Alexandra Y. Aikhenvald (eds.), *Changing valency: Case studies in transitivity*, Cambridge: Cambridge University Press, pp. 30–83.
- Edgerton, Franklin (1946). 'Indic causatives in *-āpayati* (*-āpeti*, *-āvei*)'. *Language* 22(2), pp. 94–101.
- Findlay, Jamie Y. (2016). 'Mapping Theory without Argument Structure'. *Journal of Language Modelling* 4(2), pp. 293–338.
- Garry, Jane and Carl R. Galvez Rubino (2001). *Facts about the world's languages: an encyclopedia of the world's major languages, past and present*. New York: The H.W. Wilson Company.
- Her, One-Soon (2013). 'Lexical Mapping Theory Revisited'. In Tracy Holloway King and Valeria de Paiva (eds.), *From Quirky Case to Representing Space: Papers in Honor of Annie Zaenen*, Stanford, CA: CSLI Publications, pp. 47–59.
- Kibort, Anna (2001). 'The Polish passive and impersonal in Lexical Mapping Theory'. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG01 Conference*, Stanford, CA: CSLI Publications, pp. 163–183.
- Kibort, Anna (2004). *Passive and Passive-Like Constructions in English and Polish*. Ph.D. thesis, University of Cambridge.
- Kibort, Anna (2006). 'On Three Different Types of Subjectlessness and How to Model Them in LFG'. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG06 Conference*, Stanford, CA: CSLI Publications.
- Kibort, Anna (2007). 'Extending the Applicability of Lexical Mapping Theory'. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG07 Conference*, Stanford, CA: CSLI Publications, pp. 250–270.
- Kulikov, Leonid (1993). 'The "second causative": A typological sketch'. In Bernard Comrie and Maria Polinsky (eds.), *Causatives and transitivity*, Amsterdam: Benjamins, pp. 121–154.
- Lowe, John J. (2015). 'Complex predicates: an LFG+Glue analysis'. *Journal of Language Modelling* 3(2), pp. 413–462.
- Lowe, John J. (2019). 'Argument alternations in complex predicates: an LFG+glue perspective'. *Linguistic issues in Language Technology* 17(2), pp. 1–16.
- Lowe, John J. and Ali H. Birahimani (2019). 'Causative alternations in Siraiki'. *Transactions of the Philological Society* 117(2), pp. 266–293.
- Lowe, John J., Adriana Molina-Muñoz, and Antonia Ruppel (2019). 'Causatives and their passives in Sanskrit'. In Miriam Butt, Tracy Holloway King, and Ida Toivonen (eds.), *Proceedings of the LFG19 Conference*, Stanford, CA: CSLI.
- Saksena, Anuradha (1982). 'Contact in causation'. *Language* 58, pp. 820–831.
- Shackle, Christopher (1976). *The Siraiki language of central Pakistan: A reference grammar*. London: School of Oriental and African Studies, University of London.
- Shibatani, Masayoshi and Prashant Pardeshi (2002). 'The causative continuum'. In Masayoshi Shibatani (ed.), *The grammar of causation and interpersonal manipulation*, Amsterdam: Benjamins, pp. 85–126.