Raising and passive in Sanskrit

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Abstract

In this paper we present and analyse data for a set of Sanskrit constructions involving the passive of raising / functional control verbs. Our analysis has theoretical consequences for the analysis of control and raising in LFG, and bears on the so-called 'Subject Condition' (Bresnan and Kanerva 1989) and Visser's Generalization (Bresnan 1982).

1 Preliminaries

In this paper we explore the syntax of functional control constructions in Sanskrit, with particular reference to the evidence provided by passive control structures. The type of construction which we focus on in this paper is illustrated in (1), though there are alternative passive constructions to that shown in (1b) which will be introduced fully below.[1]

(1) a. *rājāno rāmaṃ hantuṃ na śaknuvanti*
kings.NOM.PL.M R.ACC.SG.M slay.INF not can.3PL
'The kings cannot slay Rāma.'

b. *rāmo rājabhir hantuṃ na śakyate*
R.NOM.SG.M kings.INS.PL.M slay.INF not can.PASS.3SG
'Rāma cannot be slain by the kings.'

We begin in this section by introducing the two main morphosyntactic categories relevant for the present paper: the infinitive (§1.1), the morphological category of the predicate of controlled complement clauses; and the passive (§1.2). In §2 we present the data for complement control structures in Sanskrit; in §3 we discuss the LFG analysis. In §4 we conclude.

1.1 The infinitive

The Classical Sanskrit infinitive is a common non-finite verb form, used for the verbal predicates of a) complement clauses of certain, mainly modal, predicates, b) purposive adjunct clauses, and c) clauses dependent on certain nouns/adjectives. In this paper our focus is exclusively on infinitival complement clauses, as in (1a), and their passives as in (1b).

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[1]In this paper we mix constructed examples, as in (1), with examples from corpus searches which served as the basis of our empirical investigations. Corpus examples are attributed to particular texts; constructed examples are unattributed.

Sanskrit distinguishes three voices or diatheses: active, passive, and middle (self-beneficial/reflexive).[2] The passive and middle are often syncretic, but otherwise these voices are morphologically fully distinct in all finite categories and in the most common non-finite category, the participles. The infinitive, however, does not distinguish voice. By default, the infinitive adopts the active voice, and there is no way in Classical Sanskrit to express an explicitly passive sense with an infinitive, with the exception of the constructions discussed in this paper; see table 1.

Table 1: The Sanskrit voice system

	Finite	Participle	Infinitive
Active	*pacati* 'he cooks'	*pacant-* 'cooking'	*paktum* 'to cook'
Middle	*pacate* 'he cooks (for himself)'	*pacamāna-* 'cooking (for oneself)'	*'to cook (for oneself)'
Passive	*pacyate* 'it is cooked'	*pacyamāna-* 'being cooked'	*'to be cooked'

However, a passive reading of the infinitive is obligatory in infinitival clauses which are arguments of morphologically passive verbs, as in (1b).[3] We therefore assume that the active reading of the infinitive is a default, which is overridden in certain syntactic contexts.[4]

1.2 The passive

Finite and participial passives always function in opposition to a corresponding active finite or participial form. But Sanskrit also has an exclusively passive construction, the 'gerundive', a nonfinite (morphologically adjectival) form which has a usually deontic modal sense. For example, beside the forms of *pac* 'cook' given above, a gerundive *paktavya-* '(fit/intended) to be cooked' can be formed. There is no corresponding active or middle formation. Despite being (morphologically) nonfinite, the gerundive is very common as a main clause predicate; the majority of our data below involves gerundival matrix clauses.

[2]Often in Classical Sanskrit the self-beneficial/reflexive sense of the middle is weak, and it is functionally all but equivalent to the active. It is the difference between active and passive which matters for our purposes.

[3]On the passive reading of the infinitive see Oberlies (2003b, 276–278), who cites also Whitney (1896, §988) and Speyer (1896, 65–66) for the same occasional passive use in Vedic.

[4]The passive reading of an infinitive is also optional when an infinitival clause is an adjunct (purposive) to a passive verb. We do not analyse that here. In a few exceptionally rare instances – only a handful recognized in the whole of Classical Sanskrit literature – an infinitive appears to have a passive reading while not under the scope of a morphologically passive matrix verb. Most examples are from the Sanskrit epics, the language of which is less standardized than the majority of Classical Sanskrit literature. Such examples are best treated as sporadic cases of a passive interpretation overriding the default active interpretation forced by the context.

Another morphologically nonfinite verb form which is sometimes considered 'passive' is the 'past participle', often labelled the 'past passive participle' or 'perfect passive participle'. This is not in fact a truly passive formation, showing rather ergative-absolutive alignment: the past participle agrees with the patient/object-like argument of transitive verbs (O), like a standard passive, but with the single subject-like argument (S) in the case of intransitive verbs. This contrasts with true passives (including the gerundive), which are freely formed to intransitive verbs in Sanskrit, resulting in impersonal constructions with default third person singular or neuter singular morphology. Table (2) contrasts the transitive verb *pac* 'cook' with the intransitive *svap* 'sleep'; the finite passive and gerundive illustrate the true passive alignment, and while the past participle mirrors the argument alignment of the true passives in the case of *pac*, it mirrors the active in the case of *svap*.

Table 2: Argument alignment in Sanskrit

	transitive	intransitive
active	*pacati* 'A cooks O'	*svapiti* 'S sleeps'
fin. passive	*pacyate* 'O is cooked (by A)'	*supyate* 'It is slept (by S)'
gerundive	*paktavyam* '(O is) to be cooked (by A)'	*svaptavyam* 'It is to be slept (by S)'
past ptc.	*pakva-* '(O) has/having been cooked (by A)'	*supta-* '(S) has/having slept'

Nevertheless, there are certain complications in distinguishing passive from ergative in Sanskrit. Firstly, the past participle occasionally shows passive alignment; that is, impersonal passives to intransitive verbs are sometimes found even with the past participle. So a construction like *tena suptam* lit. 'it was slept by him' is possible, alongside the standard *sa suptaḥ* 'he (has) slept'. This is likely analogical on the finite passive, but in any case prevents us from entirely excluding the label 'passive' for the past participle. Secondly, most subject tests in Sanskrit target the most agentive argument rather than what we might consider the 'grammatical subject', making it hard to prove, for example, whether the promoted patient or the demoted agent of a finite passive is the grammatical subject. In the case of complement control, past participles of transitive raising/control verbs have exactly the same effect on the voice interpretation of the controlled infinitive as finite passives: the infinitive must be interpreted as passive. At least in this respect, then, the past participle of transitive verbs is functionally passive. In this paper we focus on the verb *śak*, which is intransitive, but the constructions we analyse are perfectly possible with a transitive verb in the past participle. The following example illustrates this with the transitive verb *yuj* 'join', which in the passive can mean 'is fitting, is possible'.

(2) *sa* *te* *daṇḍayituṃ yuktaḥ*
he.NOM.SG.M you.GEN punish.INF join.PST.PTC.NOM.SG.M
'He ought to be punished by you.' (*Kathāsaritsāgara* 9.2.114)

2 Raising/control in Sanskrit

2.1 The categories of verbs

Pāṇini, the ancient Indian grammarian whose Sanskrit grammar, the *Aṣṭādhyāyī*, was both a highly sophisticated generative description of late Vedic Sanskrit and a standard for prescriptive use for the Classical language, specifies a number of semantic categories of verb which govern infinitive clauses: verbs of 'desiring' (e.g. *iṣ* 'want, desire'); verbs of 'ability' (e.g. *śak* 'can, be able'); verbs of 'daring' (e.g. *dhṛṣ* 'dare'); verbs of 'knowing' (e.g. *jñā* 'know'); verbs of 'aversion' (e.g. *glai* 'be averse, dislike'); verbs of 'striving' (e.g. *ghaṭ* 'strive, endeavour'); verbs of 'beginning' (e.g. *rabh* 'begin'); verbs of 'success/permission' (e.g. *labh* 'succeed, have permission'); verbs of 'undertaking' (e.g. *kram* 'undertake, set out'); verbs of 'capability' (e.g. *sah* 'have power, be capable'); verbs of 'deserving' (e.g. *arh* 'be worthy, deserve'); verbs of 'being' (e.g. *as* 'be').[5]

Almost all of these verb classes occur in control constructions only as subject control predicates. In our corpus, the only exceptions are certain preverb-verb combinations involving *jñā* 'know': *anu-jñā* 'permit' and *ā-jñā* 'command' show object control; in its simplex form and with other preverbs, *jñā* shows only subject control. In this paper we consider only subject control.

An important distinction must be drawn between 'raising' and 'equi' verbs, that is between verbs which place semantic constraints on their subject argument, i.e. which have thematic subjects, and those which do not, i.e. which have non-thematic subjects.[6] It has not been previously noted that in Sanskrit only raising verbs, i.e. verbs with non-thematic subjects, are at all common in the passive; control predicates with thematic subjects, such as the otherwise highly frequent *iṣ* 'want', are distinctly rare in the passive.[7]

The empirical investigation which served as the foundation of this project was based on an electronic corpus of around 5.5 million words.[8] Our corpus contains

[5] Aṣṭādhyāyī 3.3.158, 3.4.65.

[6] By 'subject' here we mean subject in the active, i.e. in argument structure terms the arg_1, not the grammatical function SUBJ.

[7] When used as control predicates, that is. The passive of *iṣ* 'want' as a simple transitive verb is common.

[8] The corpus comprises texts from a broad variety of genres and periods of Sanskrit. It includes c. 1.3 million words of late Vedic text, c. 1.7 million words of Epic and c. 2.5 million words of various genres of Classical (i.e. post-Pāṇinian) texts dating as late as the 13th century AD. The 'Vedic' texts are restricted to the later Vedic prose texts (Brāhmaṇas, Āraṇyakas and Upaniṣads), which are linguistically much closer to Classical Sanskrit than early Vedic, and represent a form of the language particularly close to that which Pāṇini's grammar set out to describe. The 'Epic' texts are based on oral traditions whose origins predate Pāṇini but that, in their final form, employ a language mostly

1,071 tokens of passive raising constructions: 879 tokens with the passive of *śak* 'can'; 159 tokens with the passive of *yuj* 'join' (always with *na* 'not' meaning 'not fit to, not able to'); 23 tokens with the (gerundive-only) predicate *nyāyya* 'be proper'; and 10 tokens with the passive of *rabh* 'begin'. Although there are more equi verbs overall, few occur in the passive: we identified 9 tokens with *iṣ* 'want', 4 tokens with *jñā* 'know', and one token with *īh* 'desire'. We are not certain of the status of *labh* 'have opportunity' (i.e. whether or not its subject is thematic), of which we identified ten relevant passive tokens.

For reasons of space, in this paper we do not address the analysis of equi/control verbs, restricting ourselves to raising verbs. While the phenomena to be analysed, including the possible passive constructions, are superficially similar, it is worth noting that the analysis we propose for verbs like *śak* 'can' depends on the non-thematic status of the active subject, and could not be extended to verbs like *iṣ* 'want'. We hope to address the latter in future work.

2.2 The passive constructions

When a raising verb is active, there is only one possible construction and interpretation, as in the constructed example (1b) and in (3), from our corpus:

(3) *na bhīṣmaṃ pāṇḍavā aśaknuvan raṇe jetum*
not Bh.ACC P.NOM.PL can.IMPF.3PL battle.LOC conquer.INF
'The Pāṇḍavas could not conquer Bhīṣma in battle.'
(*Mahābhārata* 6.105.10)

As discussed, subject control is obligatory. As seen in (3), Sanskrit is a non-configurational language, and there is no requirement for the infinitival complement clause to form a single constituent in the c-structure.

In the passive, there are three possible constructions, all apparently semantically equivalent. We begin with examples of the gerundive *śakya-* 'able to be done', which most clearly and commonly attests all three variants.[9] The following examples are from our corpus and all involve the same logical object of the infinitive, the first person pronoun.

(4) *na ahaṃ vedair na tapasā na dānena na ca*
not I.NOM Veda.INS.PL not asceticism.INS not generosity.INS not and
ijyayā śakya evaṃvidho draṣṭum
reverence.INS can.GDV.NOM.SG.M such.NOM.SG.M see.INF
'I cannot be seen in this way, neither through the Vedas, nor asceticism, nor generosity, nor reverence.' (*Mahābhārata* 6.33.53)

following Pāṇinian rules; the 'Classical' corpus covers a range of textual genres (narrative literature, poetry, drama, śāstra (= technical literature in a variety of fields) and religious texts).

[9]Beside the root *śak*, all three constructions are also attested with the similar raising predicates *yuj*.PASS 'it is fitting' and *nyāyya-* 'it is proper'.

(5) *anyathā nahi māṃ draṣṭuṃ śakyam*
otherwise not I.ACC see.INF can.GDV.SG.NT
'Otherwise no one can see me.' (*Kūrmapurāṇa* 2.10.4)

(6) *na śakyaṃ mānavair draṣṭum ṛte dhyānād ahaṃ tv iha*
not can.GDV.NT.SG men.INS see.INF without meditation.ABL I.NOM but here
'But without meditation men cannot see me here.' (*Liṅgapurāṇa* 1.24.8)

In (4), the matrix predicate *śakya* agrees with the pronoun *aham*, which is functionally the arg_2 of the infinitive, but appears here in the nominative as the arg_1 of *śakya*. The argument with which a verb agrees is the SUBJ, in Sanskrit, so we appear to be dealing with a kind of raising to subject of an argument of the complement clause. This is the most common construction with *śakya-*, accounting for 74% of unambiguous instances. We refer to this as the 'agreeing type'.

Alternatively, as in (5), the arg_2 of the infinitive may appear in the accusative case, with the gerundive in the form *śakyam*. This neuter singular form of the gerundive is a default form, used when there is no agreeing subject, e.g. also in impersonal gerundive constructions (i.e. gerundives to intransitive verbs, as *svaptavyam* in table 2). This is relatively rare, constituting only 3% of the unambiguous instances of *śakya-* in our data. Note we will argue below that the infinitival clause is not the subject of the passive matrix verb, meaning that we cannot translate this construction as something like 'To see me cannot be done'; its use and sense are indistinguishable from the types in (4) and (6). We refer to this as the 'accusative type'.

Thirdly, as in (6), the gerundive may apparently occur in the default neuter singular form, but with the object of the infinitive in the nominative. We refer to this as the 'non-agreeing type'. If the gerundive really is showing default neuter singular agreement in this case, it is a highly problematic construction, since agreement between the gerundive and its subject is obligatory, and there is no way to explain the nominative case of the infinitive's object except by treating it as the grammatical subject of the matrix clause. (Infinitives alone can never license nominative arguments, for example.) A simpler alternative here is that *śakyam*, at least in these instances, is an invariant predicate with no agreement properties. That is, rather than being an instance of the gerundive *śakya-* in the neuter singular, it is a separate invariant predicate *śakyam* which, like other invariant predicates in Sanskrit, can appear with a nominative subject with which it shows no agreement.

Fourthly, we may have ambiguous cases. In Sanskrit, nominative and accusative cases are syncretic in the neuter gender. This, and the fact that the default non-agreeing form of the gerundive is neuter singular, means that if the logical object of the infinitive is a neuter singular noun, the three constructions introduced above are indistinguishable. Such ambiguous cases are rather common, making up 30% of all constructions with *śakya-*. The following example is from our corpus.

(7) *na cec chakyam atha utsraṣṭuṃ vairam etat*
not if can.GDV.SG.NT but renounce.INF enmity.SG.NT this.SG.NT
sudāruṇam
terrible.SG.NT
'If this terrible enmity cannot be renounced...' (*Mahābhārata* 6.117.29)

As suggested by Gippert (1995), this ambiguity may be the origin of the existence of multiple constructions. Gippert assumes that what we call the agreeing type is the original pattern, with the accusative and non-agreeing types created on the basis of ambiguous constructions like (7). However, as argued below it is the accusative type which is the theoretically expected passive construction, so we would rather assume that this was the original type, and that the nominative and non-agreeing types were extracted from ambiguous structures (with the nominative type becoming predominant). In any case, the diachronic situation is not relevant for the synchronic analysis which we pursue in this paper.

Fifthly, we may simply lack any logical object. When the infinitival predicate is intransitive, it has no arg_2 to appear in either the nominative or accusative. Necessarily, the gerundive then appears in the default neuter singular. This type makes up 12% of the gerundive data.

(8) *śakyam idānīm āśvāsitum*
can.GDV.SG.NT now breathe.INF
'Now (we) can breathe.' (Lit. 'it can be breathed (by us).') (*Śakuntalā* 4.1)

With all these constructions, any agent of the infinitive is expressed in the instrumental, as exemplified in (6).

The five constructions illustrated above with the gerundive *śakyam* are also attested with other raising and control verbs, and also with the finite passive of *śak*, with the exception of the type in (6), which never occurs with finite passives. Table (3) shows the distribution of passive types with finite and gerundive forms of *śak*. That the non-agreeing type is unattested with finite verbs supports the argument that, where this is found with *śakyam*, *śakyam* is an invariant unagreeing predicate rather than a nt.sg. form of the gerundive; finite verb forms are never used as unagreeing predicates in Sanskrit, so this would explain the gap. Whereas if it were possible for an agreeing neuter singular gerundive to appear with a non-neuter and/or non-singular subject, the same ought in principle to be possible for the 3sg. finite verb.

3 Analysing *śak*

For ease of comparison, in this section we provide analyses for constructed examples. We begin with the active sentence in (9). We assume the f-structure for this in (10):

Table 3: Passive types with *śak*

śak	Agreeing	Accusative	Non-agreeing	Ambig.	Intr.
Finite	86	4	0	66	18
Gerndv. (non-nt.)	365	0	0	0	0
Gerndv. (*śakyam*)	0	16	28	212	84
Total	451	20	28	278	102

(9) *rājāno rāmaṃ hantuṃ na śaknuvanti*
kings.NOM.PL.M R.ACC.SG.M slay.INF not can.3PL
'The kings cannot slay Rāma.'

(10)
$$\begin{bmatrix} \text{PRED} & \textit{`can}\langle \text{XCOMP} \rangle \text{SUBJ}\textit{'} \\ \text{NEG} & + \\ \text{SUBJ} & \boxed{1}\left[\text{PRED } \textit{`kings'}\right] \\ \text{XCOMP} & \begin{bmatrix} \text{PRED} & \textit{`slay}\langle \text{SUBJ,OBJ} \rangle\textit{'} \\ \text{SUBJ} & \boxed{1} \\ \text{OBJ} & \left[\text{PRED } \textit{`Rāma'}\right] \end{bmatrix} \end{bmatrix}$$

This f-structure reveals a number of analytical choices, which we justify in the following sections. Given the corpus-based nature of Sanskrit, there are no clear syntactic tests which would enable us to establish these choices purely on the basis of the active. This is why the passive constructions are so crucial, and we justify our analyses below primarily on the basis of the passive constructions.

Firstly, as discussed above, we take the SUBJ argument of *śak* to be non-thematic. The verb *śak* originally had a more lexical sense 'be able, have power' in pre-Classical Sanskrit, with (presumably) semantic selection of its subject argument. Its semantic bleaching was a gradual process, and the earlier sense can sometimes be read into Classical examples. But in the Classical language *śak* can take non-animate subjects, and never needs to be interpreted as taking a thematic subject; the non-thematic status of its subject is further justified below.

Secondly, we assume functional rather than anaphoric control. Functional control by a non-thematic subject of course follows the standard LFG approach to raising vs. equi (Dalrymple et al. 2019, chapter 15). No empirical criteria have been proposed for distinguishing functional from anaphoric control in Sanskrit, however (Sanskrit does not even have expletive arguments); we offer a theoretical argument below.

While active forms of *śak* are necessarily bivalent, taking a SUBJ and XCOMP (in our analysis), it is important to note that *śak* is fundamentally intransitive, in the sense of not selecting for an object argument. This is evident from the past participle, *śakta-*, which patterns in the same way as unambiguously intransitive verbs; see table (4).

Table 4: Alignment patterns in past participle

	Present active	Past participle
Monovalent intrans.: *svap* 'sleep'	*svapiti* '(S) sleeps'	*supta-* '(S) having slept'
Bivalent trans.: *han* 'slay'	*hanti* '(A) slays (O)'	*hata-* '(O) (having been) slain'
Bivalent intrans.: *śak* 'can'	*śaknoti* '(S) can (+inf.)'	*śakta-* '(S) having been able to (+inf.)'

3.1 The accusative construction

We now move on to the passive constructions, beginning with the second type introduced above, the 'accusative type', where the verb appears in the default 3sg. (or neuter singular, in the case of the gerund), and the object of the infinitive remains in the accusative.

(11) *rājabhī rāmaṃ hantuṃ na śakyate*
kings.INS R.ACC slay.INF not can.PASS.3SG
'Rāma cannot be slain by the kings.'

As discussed above, the passive of an intransitive in Sanskrit sees the active subject realised as an instrumental-case oblique argument and no explicit subject argument, the verb appearing in the default 3sg. (or nt.sg.). This passive construction therefore fits exactly with what we would expect for the passive of the intransitive raising verb *śak*.

In our approach to argument structure and the passive we adopt the 'valency template' of Kibort (2007):[10]

(12) $\langle$ $\underset{[-\text{O}/-\text{R}]}{\text{arg}_1}$ $\underset{[-\text{R}]}{\text{arg}_2}$ $\underset{[+\text{O}]}{\text{arg}_3}$ $\underset{[-\text{O}]}{\text{arg}_4}$ ... $\underset{[-\text{O}]}{\text{arg}_\text{n}}$ $\rangle$

In Kibort's (2007) approach, the passive agent is an OBL_θ, rather than an ADJ. The passive is the result of a [+R] specification added to the first argument position in a valency frame which is pre-specified as [−O]. For the passive of *śak*, we require that this does not result in the XCOMP argument being promoted to subject. We therefore take XCOMP with *śak* to represent the realization of a clausal argument in the arg_3 position; arg_3 is prespecified as [+O], meaning that it can never be realized as SUBJ. To represent the difference between clausal and non-clausal

[10] We assume the formalization of Findlay (2014, 2016) underlying this, though we retain the less technical representation.

arguments, we use a feature [+C].[11] Thus in the active the argument structure of *śak* will resolve as in (13), while in the passive it will resolve as in (14).

(13)

	‘can’ ⟨	arg_3	⟩	arg_1
[default]		[+O,+C]		[−O]
		XCOMP		SUBJ

(14)

	‘can’ ⟨	arg_3	⟩	arg_1
[default]		[+O,+C]		[−O]
[passive]				[+R]
Mapping:		XCOMP		OBL_θ

The passive therefore produces a subjectless construction, in violation of the supposed ‘Subject Condition’ (Bresnan and Kanerva 1989, Berman 1999), but in line with the analysis of passives of intransitives proposed by Kibort (2006). Deshpande (1980) takes a different approach, arguing that here the infinitival phrase is the subject of the main verb. In principle this is possible, but there is no evidence for subject properties associated with the infinitival phrase, and as shown above *śak* clearly patterns as an intransitive verb in the past participle, suggesting that it should form an impersonal (subjectless) passive, as assumed here.[12]

A minor problem is the instantiation of the θ in OBL_θ. Given Kibort’s approach to the passive, the demoted subject necessarily maps to OBL_θ, but in this case the arg_1 of the predicate is a non-thematic argument and so has no role with which θ can be instantiated.[13] We assume that it is possible for θ to have a null instantiation, that is OBL_0, or more precisely (though less clearly) simply OBL. The only alternative to this would be to say that Kibort’s approach to the passive predicts that passives of subject raising verbs are impossible; but that is clearly not the case.

We therefore assume the following f-structure for the sentence in (11):

(15)
$$\begin{bmatrix} \text{PRED} & \textit{‘can}\langle \text{XCOMP} \rangle \text{OBL}_0\textit{’} \\ \text{NEG} & + \\ \text{VOICE} & \text{PASS} \\ \text{XCOMP} & \begin{bmatrix} \text{PRED} & \textit{‘slay}\langle \text{SUBJ,OBJ} \rangle\textit{’} \\ \text{SUBJ} & \boxed{1} \\ \text{OBJ} & \left[\text{PRED } \textit{‘Rāma’}\right] \end{bmatrix} \\ \text{OBL}_0 & \boxed{1}\left[\text{PRED } \textit{‘kings’}\right] \end{bmatrix}$$

Since *śak* still selects for an XCOMP, we need a controller. The only available argument is the oblique argument, the OBL_0. There are a number of interesting consequences. Firstly, we must assume that the infinitive does not state constraints on

[11] We follow Dalrymple and Lødrup (2000) in assuming the usefulness of distinct grammatical functions for at least some clausal arguments. [+C] would of course be unnecessary if COMP and XCOMP were eliminated in line with e.g. Alsina et al. (2005).

[12] Furthermore, as pointed out to us by Agnieszka Patejuk, if an open clausal argument were to be a subject, we would have to assume control into a subject, a phenomenon not widely admitted (though see Arka and Simpson 1998, Stiebels 2007, Patejuk and Przepiórkowski 2020).

[13] We thank an anonymous reviewer for pointing this out to us.

the case of its subject; this is supported by the rare possibility of infinitives taking accusative case subjects (Oberlies 2003b, 278), alongside the standard nominative case controllers of the active construction discussed above.

Secondly, it will not be sufficient to assume a standard subject control equation such as:

(16) $(\uparrow \text{SUBJ}) = (\uparrow \text{XCOMP SUBJ})$

Such an equation will not account for both active and passive of *śak*; we will therefore require a more nuanced phrasing; this is discussed further below.

We are here considering only raising verbs. Yet in the comparable case of control verbs, (anaphoric) control by a passive agent violates Visser's Generalization, as formulated by Bresnan (1982). Falk (2006, 142) similarly claims that only core arguments, i.e. SUBJ or OBJ, may function as controllers. But as argued by van Urk (2013), Visser's Generalization applies only in the case of personal passives, i.e. where the passive control verb agrees with an explicit subject argument; in impersonal passives, oblique controllers are possible.[14] Van Urk (2013, 170) gives the following example from German:[15]

(17) *Es wurde versucht, Eichhörnchen zu fangen.*
it was tried squirrels to catch.INF
'(Lit.) It was tried to catch squirrels.'

The control relation between the implicit agent of the control verb and the PRO subject of the infinitive is obligatory here, just as in the Sanskrit example above. Thus, the Sanskrit evidence for raising verbs fully parallels the modification of Visser's Generalization proposed by van Urk (2013), suggesting that this may be a more general constraint applicable to both raising and control verbs.

Van Urk (2013) provides a derivational account of the modified Visser's Generalization. For an LFG account, we can begin with the generalization that the presence of a SUBJ argument rules out control by an OBL, but in the absence of a SUBJ, control by OBL is possible. We propose to model this below with reference to Kibort's (2007) theory of argument structure.

3.2 The agreeing type

As we argued in the previous section, the accusative type is in formal terms the 'expected' passive construction, i.e. exactly what we would predict if we applied

[14] On Visser's Generalization see also Boeckx et al. (2010, 125–141).

[15] All of van Urk's examples involve implicit agents, but in German just as in Sanskrit explicit oblique agents in this construction are unproblematic:

(i) *Es wurde von Hans versucht, Eichhörnchen zu fangen.*
it was by Hans tried squirrels to catch.INF
'(Lit.) It was tried by Hans$_i$ (e$_i$) to catch squirrels.'

standard principles of passivization to the standard active control construction. But in frequency terms, it is significantly outnumbered by the agreeing type introduced in (4), where the object of the infinitive appears in the nominative and the matrix verb shows agreement with this argument:

(18) *rāmo rājabhir hantuṃ na śakyate*
R.NOM.SG.M kings.INS.PL.M slay.INF not can.PASS.3SG
'Rāma cannot be slain by the kings.'

This is more problematic to analyze, because it is not immediately obvious how or why the object of the infinitive, which has no direct relation with the raising verb, can become its subject.

Superficially similar constructions have been discussed in an LFG setting by Ørsnes (2006) and Lødrup (2014). Ørsnes (2006) discusses the 'complex passive' in Danish, as in the following example:

(19) *bilen forsøges repareret*
the.car is.tried repaired
'As for the car, an attempt is made to repair it.' (Ørsnes 2006, 388)

Here, the logical object of 'repair' becomes the subject of the passivized control verb, parallel to the Sanskrit construction under discussion. Ørsnes (2006) assumes that passivization involves suppression of the arg_1 in the argument structure, rather than demotion, and that the subject of the (passive) embedded predicate is raised to subject of the matrix predicate in order to fulfil the Subject Condition. In contrast, we assume a demotional account of the passive, and we do not assume the Subject Condition. Moreover, we are not starting with an equi verb showing obligatory anaphoric control, but with a raising verb showing functional control, nor are we starting with an embedded predicate which is marked as passive. Our analysis must therefore differ in a number of ways, and we do not need to assume a kind of last-resort raising where there was no raising before; since we already have a functional control relation in the active, it makes sense that this same relation passes over into the passive.

Lødrup (2014) discusses a superficially similar construction in Norwegian, which he calls the 'long passive':

(20) *viktige stridsspørsmål blir unnlatt å presiseres*
important issues are neglected to clarify.INF.PASS
'They neglect clarifying important issues.' (Lødrup 2014, 368)

Lødrup (2014) shows that the long passives of Norwegian are different in certain important respects from the complex passives discussed by Ørsnes (2006). Lødrup's analysis of the long passive involves a kind of restructuring, where the control and embedded verb merge in the argument structure to form a complex predicate.

The question is now whether the Sanskrit construction should be treated by assuming restructuring; a complex predicate analysis would offer a clear alternative to the control-based analysis pursued here. In fact, Deshpande (1980) and Kiparsky (2002) both refer to the passive construction with *śak* in terms which could be taken to imply a complex predicate analysis. Deshpande (1980, 102) claims that *śak* and its dependent infinitive are "increasingly bracketed" together, "creating a sort of "compound verb" like *kar saknā* ['able to do'] in Hindi." Kiparsky (2002) similarly claims that *śak* and its dependent infinitive are treated as a single predicate, by virtue of a "verb union process". Neither author further expands or justifies these claims, however. In contrast, the descendant of *śak* in Hindi/Urdu, *saknā* 'can', is a standard raising verb which embeds an XCOMP (Bhatt et al. 2011, Butt 2014). There is no light verb version of *saknā* in Hindi/Urdu, and there is no standard path of diachronic development whereby a light verb could develop into a raising verb. Rather, the opposite development is expected. Thus the modern Indo-Aryan situation renders it highly unlikely that a complex predicate analysis should be proposed for Sanskrit *śak*.[16]

Moreover, evidence from ellipsis and negation strengthens the claim that *śak* and infinitive do not form a complex predicate. Restrictions of space prevent a detailed discussion, but most tellingly it is possible to independently negate *śak* or the infinitive, with different readings. The following phrases are both common in Patañjali's *Mahābhāṣya*, often considered a standard of clear prose Sanskrit:

(21) a. *na śakyaṃ kartum*
not can.GDV.NT.SG do.INF
'(This) cannot be done.'

b. *śakyam a-kartum*
can.GDV.NT.SG NEG-do.INF
'(This) does not need to be done.' (Lit. 'can be not done')

A complex predicate analysis is therefore not viable. We propose to analyse this 'agreeing' type by permitting the passive argument structure operations to apply not, in this case, to the matrix verb which carries the morphological marking of the passive, but rather to the infinitival predicate. As discussed above, Classical Sanskrit infinitives have a single invariant form with no voice marking, and outside of this construction show regular active syntax and semantics. Nevertheless, the interpretation of the infinitive is clearly passive in this construction. The f-structural analysis we assume is the following:

[16]We thank Miriam Butt (p.c.) for discussion of the points in this paragraph. See also Butt and Lahiri (2013) on the diachronic tendencies of light verbs.

(22)
$$\begin{bmatrix} \text{PRED} & \textit{`can}\langle \text{XCOMP}\rangle\text{SUBJ'} \\ \text{NEG} & + \\ \text{SUBJ} & \boxed{1}\left[\text{PRED } \textit{`Rāma'}\right] \\ \text{XCOMP} & \begin{bmatrix} \text{PRED} & \textit{`slay}\langle \text{SUBJ,OBL}_\theta\rangle\textit{'} \\ \text{VOICE} & \text{PASS} \\ \text{SUBJ} & \boxed{1} \\ \text{OBL}_\theta & \left[\text{PRED } \textit{`kings'}\right] \end{bmatrix} \end{bmatrix}$$

The passive morphology of the raising verb can therefore be associated with functional passivity of its embedded predicate, rather than itself. For simplicity let us assume that the functional passivity, together with its argument structure consequences, is associated with an f-structure feature PASSIVE; we can then capture the variable application of the passive with *śak* very simply, by assuming that the PASSIVE feature is subject to a functional uncertainty in the lexical entry of the morphologically passive form of the raising verb:

(23) $(\uparrow\ (\text{XCOMP})\ \text{VOICE}) = \text{PASSIVE}$

The predicate of whichever f-structure gets the PASSIVE voice feature will necessarily show the associated passive argument structure operations, resulting in either the 'accusative' type discussed above, or the 'agreeing' type discussed here. Thus both types can be derived from a single point of optionality in an otherwise uniform control construction.

The analysis proposed here offers support for the non-thematic status of the subject position of *śak*: since there is no difference in the selectional properties of the verb between the active and agreeing passive types (e.g. between (10) and (22)), but the subject of the verb does change, the subject position of *śak* must be non-thematic.

In terms of the passive reading of the infinitive, despite the lack of passive morphology and the fact that infinitives cannot freely take a passive reading, we assume that the possibility of an infinitive with passive argument structure is licensed in the lexicon, but can only surface in a construction which specifies a passive reading for the infinitive. Thus infinitives cannot be used freely with a passive sense, but only when embedded under particular predicates, like the passive of *śak*, which are capable of specifying the passive voice feature of their embedded predicate. We assume that the functionally passive version of the infinitive is associated with the following specification:

(24) $\text{VOICE} =_c \text{PASS}$

3.3 Intransitive verbs

As illustrated in (8), when the embedded verb is intransitive, there is no embedded object argument to appear in either the nominative, as in the 'agreeing' construction, or in the accusative, as in the 'accusative' construction. An additional

example, constructed for the purposes of analysis (based roughly on *Mahābhārata* 12.314.20), follows:

(25) *na tatra śakyate gantuṃ rāmeṇa*
not there can.PS.3SG go.INF R.INS
'Rāma cannot go there.' (Lit. 'it cannot be gone there by Rāma.')

Of the two analyses proposed so far, the first, the accusative type – in which *śak* undergoes passivization and its OBL_θ argument controls the embedded subject position – can unproblematically be applied to intransitive embedded verbs as well:

(26)
$$\begin{bmatrix} \text{PRED} & \textit{'can}\langle \text{XCOMP} \rangle \text{OBL}_\theta\textit{'} \\ \text{NEG} & + \\ \text{VOICE} & \text{PASS} \\ \text{XCOMP} & \begin{bmatrix} \text{PRED} & \textit{'go}\langle \text{SUBJ} \rangle\textit{'} \\ \text{SUBJ} & \boxed{1} \\ \text{ADJ} & \left\{ \left[\text{PRED} \quad \textit{'there'} \right] \right\} \end{bmatrix} \\ \text{OBL}_\theta & \boxed{1} \left[\text{PRED} \quad \textit{'Rāma'} \right] \end{bmatrix}$$

If we tried to apply the analysis of the agreeing type – where the passive, which is marked morphologically on the matrix verb, applies in fact to the predicate of the embedded infinitive – we would run into problems. The single argument of the infinitive would appear as OBL_θ; this OBL_θ would be necessarily case marked as instrumental, but such an argument could not then serve as the SUBJ of *śak*, since that must necessarily be nominative.

(27) Illicit structure:

$$\begin{bmatrix} \text{PRED} & \textit{'can}\langle \text{XCOMP} \rangle \text{SUBJ}\textit{'} \\ \text{NEG} & + \\ \text{SUBJ} & \boxed{1} \left[\text{CASE} \quad \text{NOM} \right] \\ \text{XCOMP} & \begin{bmatrix} \text{PRED} & \textit{'go}\langle \text{OBL}_\theta \rangle\textit{'} \\ \text{VOICE} & \text{PASS} \\ \text{OBL}_\theta & \boxed{1} \begin{bmatrix} \text{PRED} & \textit{'Rāma'} \\ \text{CASE} & \text{INSTR} \end{bmatrix} \\ \text{ADJ} & \left\{ \left[\text{PRED} \quad \textit{'there'} \right] \right\} \end{bmatrix} \end{bmatrix}$$

Such an analysis is therefore impossible; it is ruled out given our assumption of functional control. If we had assumed anaphoric control – and additionally backward control (which is attested in other control structures in Sanskrit) – then the equivalent of the structure in (27) would be possible. That this should not be the case is a desirable outcome, since it eliminates an analytical ambiguity for sentences like (25). We therefore take this as a theoretical argument in favour of functional control.

3.3.1 Excursus: the active *śakyate*

In fact, we can take this argument further. An intriguing possibility is that we can explain the development of a morphologically passive but functionally *active* form of *śak* by means of an attempted repair of the structure in (27). Particularly in Epic Sanskrit, what is formally the passive of *śak* can sometimes have active sense:[17]

(28) *na tu māṃ śakyase draṣṭum anena eva sva-cakṣuṣā*
not but I.ACC can.2SG see.INF this.INS EMPH own-sight.INS
'But you cannot see me with this sight of yours.' (*Mahābhārata* 6.33.8)

As a functionally active present stem, *śakyate* (or in this case, *śakyase*) would not be morphologically impossible in Sanskrit, since a few verbs do form functionally active present stems which are morphologically like a passive. But this is generally found with verbs which do not regularly form passives, so the ambiguity of active vs. passive *śakyate* is unusual, and in addition *śak* already has a regular active present stem, *śaknoti*. If active *śakyate* could be analysed as somehow derived from the passive *śakyate*, this would therefore be preferable to assuming an independently created present stem which unnecessarily introduces ambiguity into the paradigm.

We propose, therefore, that the active *śakyate* may derive from an attempt to construct the 'agreeing' passive type with intransitive infinitival predicates. The only way to repair the structure in (27) is to put the single argument in the nominative case, to provide a valid subject for the matrix verb. That is, the sentence in (25) would have to be reformulated as follows:

(29) *na tatra śakyate gantuṃ rāmaḥ*
not there can.PS.3SG go.INF R.NOM.SG
'Rāma cannot go there.'

But this is now superficially an active structure. Conceivably, a first attempt to parse (29) might try to force a passive interpretation on the infinitive, but this could only work with anaphoric control of the embedded OBL argument:

(30) Illicit structure:

$$\begin{bmatrix} \text{PRED} & \textit{`can}\langle \text{XCOMP}\rangle\text{SUBJ}\textit{'} \\ \text{NEG} & + \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \textit{`Rāma'} \\ \text{CASE} & \text{NOM} \end{bmatrix} \\ \text{XCOMP} & \begin{bmatrix} \text{PRED} & \textit{`go}\langle \text{OBL}_\theta\rangle\textit{'} \\ \text{VOICE} & \text{PASS} \\ \text{OBL}_\theta & \begin{bmatrix} \text{PRED} & \textit{`pro'} \\ \text{CASE} & \textit{instr} \end{bmatrix} \\ \text{ADJ} & \left\{ \begin{bmatrix} \text{PRED} & \textit{`there'} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

[17] See Oberlies (2003a, 198), for whom this "looks like a passive used as active".

But evidence for anaphoric control by *śak* is otherwise lacking. By far the simpler way to interpret (29) is as a simple active structure, by making the assignation of passivity by *śakyate* optional:

(31)
$$\begin{bmatrix} \text{PRED} & \textit{`can}\langle \text{XCOMP} \rangle \text{SUBJ}\textit{'} \\ \text{NEG} & + \\ \text{SUBJ} & \boxed{1}\begin{bmatrix} \text{PRED} & \textit{`Rāma'} \\ \text{CASE} & \text{NOM} \end{bmatrix} \\ \text{XCOMP} & \begin{bmatrix} \text{PRED} & \textit{`go}\langle \text{SUBJ} \rangle\textit{'} \\ \text{SUBJ} & \boxed{1} \\ \text{ADJ} & \left\{ \begin{bmatrix} \text{PRED} & \textit{`there'} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

To recapitulate our argument, then: given the analyses proposed above, with intransitive infinitives only the accusative type passive is possible, but with transitive verbs, it is the agreeing type which predominates. This predominance may have led to attempts to construct an agreeing type with intransitive infinitives, but given the case constraints, this could only be realised by effectively reinterpreting the passive *śakyate* as an active. To our knowledge there has been no better explanation proposed for the otherwise unexpected active *śakyate*.

3.4 The non-agreeing type

As discussed above, the non-agreeing type is found only with the gerundive, never with the finite passive.[18]

(32) *na tena śakyaṃ hantuṃ rāmaḥ*
not he.INS can.GDV.SG.NT slay.INF R.NOM
'Rāma cannot be slain by him.'

As suggested above, the best way to analyse this is to take the matrix predicate here not as the nt.sg. of the gerundive but as an invariant, non-agreeing predicate. The analysis of this type will therefore be entirely parallel to the analysis of the agreeing type, the only exception being that there will be no direct agreement between the form of *śak* and its nominative subject argument.

3.5 The control equation

As discussed above, a simple subject control equation will not suffice to cover all the constructions discussed in this section. In particular, the violation of Visser's Generalization requires us to license control by an OBL argument, but only in the absence of a SUBJ argument. The controlled argument is always a SUBJ, regardless

[18] In this section we are only considering *śak*. With other verbs such as *yuj*, the non-agreeing type is also found with the past participle. This fits with our proposed analysis, since it is in principle possible for the nt.sg. of past participles, just as of gerundives, to become non-agreeing predicates.

of the voice of the infinitive. We therefore reformulate the control equation with reference to argument structure positions, rather than grammatical functions:

(33) $(\uparrow_{\sigma} \text{ ARG}_1)_{\sigma^{-1}} = (\uparrow \text{ XCOMP SUBJ})$.

Following Kibort (2007), arg_1 (= s-structure ARG_1, following Findlay 2014, 2016) will be the subject in an active construction, but in the passive will be associated with OBL_{θ}; since *śak* is intransitive, when arg_1 is realized as OBL_{θ}, there will be no subject argument, thus capturing the generalization.

4 Conclusion

In this paper we have developed an LFG analysis of raising constructions in Sanskrit, with a particular focus on the verb *śak* 'can', and on interaction of raising with the passive. In passive raising constructions, passive morphology appears on the raising verb, while the form of the infinitive does not change, as there is no morphologically marked passive infinitive. From five superficially distinct passive types (the agreeing type, the accusative type, the non-agreeing type, ambiguous cases and constructions with intransitive infinitives), we distinguished two formal variants, distinguished by a single point of variation in the application of the passive feature.

In the first, the passive operation applies as expected to the argument structure of the raising verb, resulting in a subjectless construction with functional control by the matrix OBL_{theta} of the XCOMP SUBJ. This underlies the accusative type, and the construction with intransitive infinitives.

In the second, the passive operation applies rather to the argument structure of the infinitival predicate, despite being morphologically marked on the raising verb. This gives a standard subject to subject raising construction, but with passive interpretation of the infinitive, meaning that the logical object (the arg_2) of the infinitive can appear as the nominative subject of the matrix verb.

Our analysis provides further evidence against the universal status of the so-called 'Subject Condition'; it also supports the modification of Visser's Generalization proposed by van Urk (2013), and extends its applicability to raising verb. The latter point, which applies beyond Sanskrit, requires control equations to be stated not purely in terms of grammatical functions, as is standard in LFG, but at least partly in terms of argument structure positions.

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